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THE IRON TRADE REVIEW

A Weekly Journal Devoted to the Machinery, Metal-Working and Foundry Trades, and Iron and Steel Manufacture.

VOLUME XXXVII CLEVELAND, OHIO, SEPTEMBER 15, 1904 NUMBER 37

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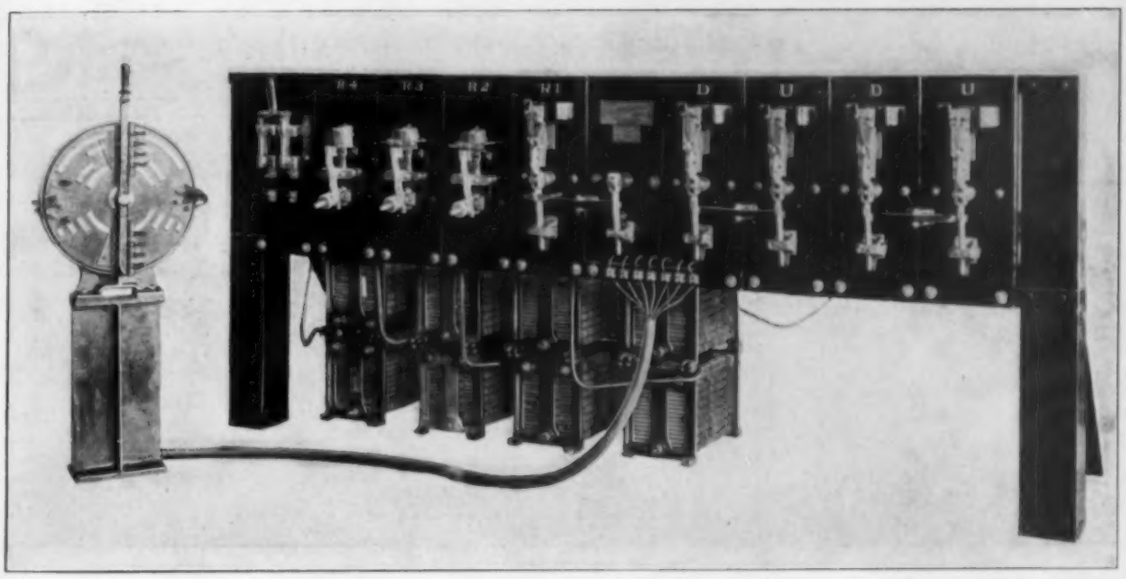

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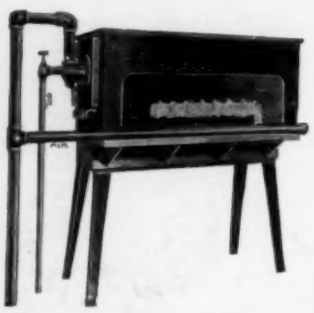

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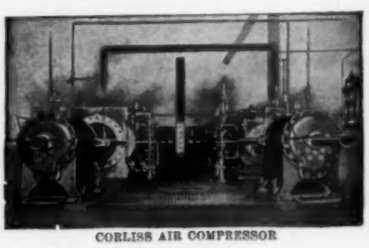

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THE IRON TRADE REVIEW

VOLUME XXXVII CLEVELAND, OHIO, SEPTEMBER 15, 1904 NUMBER 37

THE WEEK IN IRON CIRCLES.

THE MARKET AT LARGE.

The recent reductions in plates and structural steel have resulted in more discussion than business. While they are recognized as bringing a better alignment of finished material prices with pig iron, they are some distance above the minimum prices of other years, and buyers await assurance of their permanency. The fact that reductions in billets, rails and bars are under consideration tends further to prolong the waiting attitude of buyers, as every factor of uncertainty has its bearing on the general situation. The billet meeting is expected to be held at Pittsburg some time next week and the manufacturers of steel bars will meet there on the same day. Some steel companies have considered the billet agreement of so little practical value that difficulty has been found in arranging for a full meeting. Other manufacturers attach more weight to this agreement now that a reduction is certain and especially since the choice between agreed prices and an open market has been definitely and unanimously made by the large producers in favor of the former. It is believed the billet price will be reduced to $19 and that the difference between billets and sheet bars will be greater than heretofore. Ideas differ as to steel bars, but in view of the large contracts taken at 1.30c early in the year just before the advance to 1.35c, of which notice was widely given, it is predicted that the 1.30c price will be named again, this being the level reached after the $6 reduction in November of last year. However, the average price of bar iron in July and August, as shown by the wage settlement for Sept. 1 was 1.20c, and this has its bearing on the price for steel bars. Rails, the most important of the unadjusted products, are not at the moment an issue. A special set of factors enters into the price question here, and there is no immediate call for naming next year's prices.

An agreement on the iron scale between the Republic Iron & Steel Co. and the Amalgamated Association is the event of the week in respect to labor, and the same company has accepted the minimum rate in the coal miners' scale in Alabama, but has carried its contention for the "open shop" principle. The new puddling scale shows a reduction of 2 percent from the $5 base, while reductions in the finishing scale range up to 13 percent. The Alabama strike, while stubbornly fought, shows gains for the employers, and two more furnaces have started this month, in addition to the new Battelle furnace in the northeast corner of the State.

New business in mill products is of little significance. The recent starting of so many blast furnaces and coke ovens of the Steel Corporation is explained in part by the hurrying of rail orders to completion, for shipment into Canada before the rail tariff becomes effective. Considerable other export business has been booked also in recent months, and there is evidently a better aggregate of specifications from home consumers than might be inferred from the pace of current new business. Following the announcement of a nickel steel plate contract with Japan is the report of a sale of 25,000 boxes of tin plate for shipment to the same country. Some improvement in merchant pipe is noted since the recent reduction in price. A contract for 15 miles of line pipe was closed by an independent interest. The sheet trade is quiet and concessions of $1 to $2 a ton are heard of—an evident anticipation of the reduction in sheet bars. The agreement on structural shapes is reported to be reinforced by an understanding on prices for fabrication and erecting, based on $12 a ton for the former and $10 for the latter.

The pig iron statistics point to an increase in consumption in the past month that would not be inferred from the general tenor of reports from consuming industries. The foundry trade, for example, does not find any definite improvement. But with merchant stocks reduced 60,000 tons in August and coke iron production on Sept. 1 at a yearly rate of 15,000,000 tons, or 2,400,000 tons a year greater than on Aug. 1, while actual production of coke iron in August was 63,000 tons more than the total of 1,106,000 tons for July, there is but one conclusion to be drawn. Steel works demand is responsible for most of the increase. Bessemer iron is a shade weaker and foundry iron has shown no improvement in price the past week and little prospect of any. Demand is light and few buyers have any interest as yet in covering for forward deliveries.

PITTSBURG.

OFFICE OF *The Iron Trade Review*,
429 PARK BUILDING, Sept. 14.

The expected reductions in billets, sheets and tin bars, and merchant steel bars, although looked for almost daily, have not been made at this writing. Meetings of the billet and bar associations will be held here on Thursday, but the extent of the cut in these lines cannot be forecast at this time, as the leading steel interests entertain different views on this point. Some difficulty has been experienced in securing the consent of all the members of the billet association to attend a general meeting, as a few manufacturers are entirely satisfied to let matters remain as they are at present. This situation no doubt gave rise to rumors of a pending dissolution of the association and the prediction of an open market in the very near future.

The reductions in plates and structural shapes made last week have as yet had little effect on the buying movement in these lines. It is rather early to expect any great improvement, but the trend of affairs within the next few weeks will show whether the trade is satisfied with the prices as established, or whether it is necessary to cut deep in order to secure the much desired reaction. There have been few upward movements in the iron trade that have not been preceded by prices that represented little or no profit to the manufacturer; but whether the conditions in this country are such as not to require such drastic action in the present case only the future will tell. Prices cannot reach the low levels touched in the past six or eight years, however, on account of the generally increased costs in all lines of manufacture. Yet consumers recognize that present prices, although low as compared with those ruling in the boom periods, still represent a fair profit to the manufacturers.

The recent heavy increase in active furnace capacity of the Carnegie Steel Co. is largely due to the heavy demand for iron for the Edgar Thomson and Ohio works rail mills, both being engaged on the production of rails for the Canadian trade, which can be delivered free of duty until Nov. 30. The duty of $7 a ton on rails went into effect on August 27, and rails purchased before that date can be delivered free of duty until Nov. 30. They will be followed, however, and levied upon if they are not laid by Feb. 28, next year.

It is estimated that contracts from Canadian roads

placed with the Carnegie company this year aggregate fully 100,000 tons, the Canadian roads having made heavier purchases than customary, anticipating the enforcement of this prohibitive tariff. Both mills are being pushed to their utmost capacity, so that the entire tonnage will be shipped before the close of the navigation season, most of the rails going north by boat from Conneaut harbor.

In finished lines no great improvement is to be noted, although the seasonable demand for sheets, pipe, wire nails and wire products is almost up to normal. A contract for close to 20,000 tons of nickel steel plates is reported to have been taken by the Carnegie Steel Co., specifications on 5,000 tons already having been received. In the wire nail trade in the West extremely low prices are being made, nails having sold as low as $1.80, Kansas City, the freight from Pittsburg amounting to 65 cents. During the period of low freight tariffs in the West it is reported that the American Steel & Wire Co. rushed upwards of 20,000 tons of finished material to its Denver warehouse. The contest between the Colorado Fuel & Iron Co. and the American Steel & Wire Co. for control of the Western trade grows keener daily, the former company having the advantage of location. A meeting of the cut nail association was held last week, but with the largest producer operating independently the association can do nothing but meet the prices named by this concern. Both iron and steel cut nails are now selling on the basis of $1.60.

The idle coke capacity in the upper and lower Connellsville regions has been reduced one half by the firing of about 4,500 ovens by the H. C. Frick Coke Co., while independents started up about 500. The increased blast furnace capacity of the Steel Corporation furnaces caused the firing of the Frick ovens, while a slightly better demand is reported among the independent operators, although prices have not improved to any extent.

The bar iron wage scale has at last been settled, the Amalgamated Association accepting reductions ranging from 2 to 13 percent. The mills of the Republic Iron & Steel Co. at Youngstown have resumed operations, but the adjustment of this scale in no way affects the strike situation at the mills of the Carnegie Steel Co. at Youngstown and Girard. Little difficulty is experienced in operating the upper plant at Youngstown and the Girard mills, and the lower plant at Youngstown will be placed in operation shortly.

Pig Iron.—The iron market continues quiet, the largest sale of the week amounting to 4,000 tons, the order having been placed by the Westinghouse Electric & Mfg. Co. Of this amount 3,000 tons is for Cleveland delivery and went to a Cleveland furnace at a low price. The National Tube Co. is in the market for 2,500 tons of Southern forge, and will close before the end of the week. Lower prices on Southern iron are looked for with the increase in active furnace capacity. On Northern foundry iron $12.60 can be readily done on No. 2, although as high as $12.85 is asked. On forge $11.85 Pittsburg can be readily done, while Bessemer is somewhat weaker, and it is probable that $11.75 at the furnace could be shaded for early delivery. On the whole the Northern iron situation is weaker, but prices cannot go much lower, as there is no profit at present prices to the furnace operators. We revise quotations at follows:

Bessemer, Valley	$11 75 to 11 90
Bessemer, Pittsburg	12 60 to 12 75
No. 1 Foundry	13 00 to 13 25
No. 2 Foundry	12 60 to 12 85
Gray forge, Pittsburg	11 85
Chilled basic, Valley	11 65 to 11 75
Chilled basic, Pittsburg	12 50 to 12 60

Steel.—A meeting of the billet association will be held in this city on Thursday, but the extent of the reduction cannot be forecast. While it is reported that $4 has been practically decided upon, there are producers who will not favor a reduction below $20. The spread between billets and sheet and tin bars is to be increased. Awaiting the adjustment of this matter, there is practically no buying, and the sales made are on the basis of $20, Pittsburg. Agreed prices are as follows: Bessemer and open-hearth billets, 4 x 4 inches, and slabs up to and including 0.25 carbon, $23 Pittsburg, Wheeling, Valley, Johnstown, Ashland, Ky., Irontown, O., and Lorain, O.; 0.26 and including 0.60 carbon $1 advance; and 0.61 to 1.00 carbon, $2 advance. Billets smaller than 3⅞ inches and sheets and tin bars are $1 per ton extra. Bessemer and open-hearth rods are quoted at $25.50 to $27.

Ferro-Manganese.—Foreign competition on ferro has been effectively shut out by the low prices of the domestic producers. We quote domestic ferro, 80 percent at $41 per ton, delivered in carload lots at buyer's mill, at any point east of the Mississippi.

Spelter.—The market is quiet, prime western grades being held at 5c Pittsburg, in carload lots.

Muck Bar.—The market continues quiet, and neutral bars are held nominally at $24.50 Pittsburg.

Skelp.—Demand for both iron and steel skelp continues good, but prices are ruling low. Grooved steel skelp is held at 1.25c to 1.30c, while sheared is held at 1.35c to 1.40c. Grooved iron is quoted at 1.40c to 1.45c and sheared at 1.45c to 1.50c.

Rails and Track Materials.—The Edgar Thomson and Ohio rail mills of the Carnegie Steel Co. are operating at their usual capacity on rails for Canadian delivery, which must be delivered on Canadian soil before Nov. 30 to avoid the payment of the $7 duty. On light rails low prices continue to be made. We make the following quotations: Standard sections, 50 pounds and over, in lots of 500 tons and over, $28; car lots and less than 500 tons, $30; less than car lots, $32; light rails, 16 to 40 pounds, $18 to $20. Track material, spikes, 1.55c to 1.60c.

Plates.—It is reported that the Carnegie Steel Co. has received an order for 20,000 tons of nickel steel plates from the Japanese Government, specifications for 5,000 tons already having been received. The reduced prices on plates has as yet failed to stimulate the market to any appreciable extent. We make the following quotations: Tank plate, ¼ inch thick, 6¼ to 24 inches, incl., 1.30c f. o. b. mill, Pittsburg; over 24 inches up to 100 inches, 1.40c. Extras are as follows per pound: Flange and boiler steel, .10c; marine, A. B. M. A., and ordinary fire box, .20c; still bottom, .30c; locomotive fire box, .50c; plates over 100 inches up to 110 inches in width, not less than 5c per 100 lb. extra; plates 110 inches to 115 inches wide not less than 10c extra; 115 to 120 inches, 15c extra; plates 120 inches to 125 inches wide, not less than 25c extra; plates 125 inches to 130 inches, not less than 50c extra; plates 130 inches wide, not less than $1 extra; plates 3-16 inch thick, $2 extra; gauges 7 and 8, $3 extra; No. 9, $5 extra. Five cents extra for less than carloads. Terms net cash in 30 days, and for all points of delivery in the United States except the Pacific Coast.

Structural Material.—Little new business has been placed during the week, despite reduced prices. No announcement has yet been made of the terms of the new agreement covering the fitting of material. We make the following quotations: Beams and channels, up to 15 inches, 1.40c; over 15 inches, 1.50c; angles, 3 x 2 up to 6 x 6, 1.40c; zees, 1.40c; tees, 1.45c; angles, from 3 to 16 inches, 1.40c; universal and sheared plates, 6¼ to 24 inches incl., 1.30c; over 24 inches, 1.40c base.

Bars.—A meeting of the steel bar association will be held in this city following the meeting of the billet association which is to be held on Thursday. The extent of the reduction is in doubt, but consumers having contracts in force on which quotations are guaranteed will be benefitted no matter what the reduction, and all the contracts made this year are on that basis. While bars are quoted at 1.35c, all of the large contracts have been closed on the basis of 1.30c, and should there be a reduction of $2 a ton from the present ruling price it will really only amount to a reduction of $1 on more than 90 percent of the tonnage. While bar iron is held on the basis of 1.25c to 1.30c the bi-monthly settlement made at Youngstown this week on the basis of 1.20c indicates that for some time the mills in that district have been selling on that basis instead of 1.25c. We make the following quotations: Bar iron, 1.25c to 1.30c Pittsburg for local delivery. Hoops are held at 1.55c base, and bands at 1.35c taking bar extras. Bessemer steel bars, 1.35c; open-hearth, 1.40c;

plow beams and cultivator beams, 1.35c net; channels, angles, zees and tees, Bessemer, under 3 inches, 1.45c. The following differentials are maintained on steel: Less than 2,000 pounds of a size, not less than 1,000 pounds, 10 cents advance; less than 1,000 pounds of a size, 30 cents advance.

Sheets.—Demand for sheets is improving, but there is an absence of large orders. Concessions of from $1 to $2 per ton can be more readily secured on desirable business than for some time, and it is probably due to the discounting of the cut in sheet bars by most of the independent manufacturers. On lots amounting to 25 bundles and over the leading interest is quoting on the 2.10c basis for No. 28, while the independent manufacturers will not do this except on carload lots. We make the following quotations on black sheets, 25 bundles and over: No. 8, 1.60c; No. 9, 1.56c; Nos. 12 to 14, 1.70c; Nos. 15-17, 1.75c to 1.80c; Nos. 18-21, .85c to 1.90c; Nos. 22-24, 1.95c; Nos. 25-26, 2c; No. 27, 2.05c; No. 28, 2.10c to 2.15c; No. 29, 2.35c to 2.40c; No. 30, 2.50c to 2.55c; Galvanized: Nos. 12-17, 2.20c to 2.25c; Nos. 18-21, 2.35c to 2.40c; Nos. 22-24, 2.50c to 2.55c; Nos. 25-26, 2.65c to 2.70c; No. 27, 2.90c; No. 28, 3.10c; No. 29, 3.45c to 3.50c; No. 30, 3.85c to 3.90c.

Wire and Wire Nails.—The seasonable demand for wire nails and wire products is almost up to normal, and in this vicinity no concessions are being made. Owing to the withdrawal of the largest mill producing cut nails the cut nail association is of little power in the trade. A meeting of the association was held last week and prices are now on the basis of $1.60 for both iron and steel nails. We make the following quotations: Wire nails, jobbers' carload lots, $1.60; retailers' carloads, $1.65, and less than carloads, $1.75; painted barb wire, $1.75 to jobbers in carloads; retailers' carloads, $1.80, and less than carloads, $1.90, with 30 cents for galvanizing. Annealed smooth fence wire is held at $1.45, with the usual differentials to retailers for carloads and less than carloads. Quotations are all f. o. b. Pittsburg, 60 days, with 2 percent discount for cash in ten days. Iron and steel cut nails are held at $1.65 to $1.70.

Merchant Steel.—No great improvement is to be noted in general conditions, although the mills in this district report the receipt of an increased tonnage in the past week. We make the following quotations: Toe calk, 1.90c; carriage spring steel, 1.75c; tire steel, 1.55c to 1.60c; plow steel, 6 inches and under, 1.35c for Bessemer and open-hearth; plow slabs, ¼ inch and heavier, 1.60c. Drawn and cold rolled shafting is held at 52 percent off in carload lots and 47 off in less than carload lots.

Pipes and Tubes.—The LaBelle Iron Works this week received an order from the Virginia Oil & Gas Co. for 15 miles of line pipe, being the largest order for this material closed this month. Some shading is reported on merchant pipe, but it is not very deep owing to the low list now in effect. Discounts to consumers, carload lots, f. o. b. Pittsburg, plus freight to destination according to Tube Rate book, are as follows:

MERCHANT PIPE.

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
⅛ and ¼ inch	71	55	60	53
⅜ and ½ inch	75	63	73	61
¾ to 6 inches	79	69	77½	67½
7 to 12 inches	74	59	72½	57
Extra Strong Plain Ends.				
⅛ to ⅜ inch	64	52	62	50
½ to 4 inches	71	59	69	57
4½ to 8 inches	67	55	65	53
Double extra strong plain ends, ½ to 8 inches	60	49	58	47

MERCHANT BOILER TUBES, LESS CARLOADS, 22 FEET AND UNDER.

	Steel.	Iron.
1 to 1½ inch	48	43
1¾ to 2¼ inches	60	43
2½ inches	62	48
2¾ to 5 inches	68	55
6 to 13 inches	60	43

Old Material.—Heavy melting stock continues to be held on the basis of $12 to 12.50, but the mills requiring this material have fair stocks on hand, purchased at somewhat lower prices, and are not anxious to cover at today's quotations. Our quotations, gross tons, are as follows: Re-rolling rails, $12 to $12.50; re-melting rails, $11.50 to $12; low phosphorus melting stock, $15 to $15.50; sheet scrap, $9 to $9.50; No. 1 wrought, $12 to $12.50; cast iron borings, $6 to $6.50; No. 1 cast, $10 to $10.50.

Coke.—Within two weeks the number of idle ovens in the upper and lower Connellsville regions has been reduced one half, fully 5,000 ovens having been fired. Ninety per cent of this capacity has been fired by the H. C. Frick Coke Co., indicating that the demand for coke outside of the Steel Corporation is not improving very rapidly. Prices also continue low, operators being unable to secure more than $1.40 for furnace coke, while foundry is selling on the basis of $1.85 to $2. On the other hand, the H. C. Frick Co. is receiving much better prices from the constituent companies of the United States Steel Corporation. In June the inter company price was $1.70, July $1.60 and August $1.55. These are excellent prices as compared with those prevailing in the open market. During the week ending Sept. 3 the production of the upper

CHICAGO.

OFFICE OF *The Iron Trade Review*,
1164 MONADNOCK BLOCK, Sept. 13.

The Republic Iron & Steel Co. reached an agreement last week with the Amalgamated Association, providing for a reduction in wages ranging from 2 to 13 percent, and started up its plants yesterday after a suspension of one week's duration. The company's labor troubles in the South are also in a fair way of settlement, it having announced that the minimum price per ton asked by the coal miners will be paid and employment given to all that apply for it. The demand for the "closed shop" and recognition of the union are both denied. This stand, with the agreement made with its iron and steel workers, brings to an end, so far as this company is concerned, the labor troubles which have occupied its attention for several weeks. The Inland Steel Co.'s sheet mill is still shut down, the company not yet having arrived at a satisfactory understanding with the Amalgamated Association.

The reductions announced last week in structural steel and plates have not stimulated the demand for these products to the extent many had expected. Dissatisfaction is expressed that the associations did not cut prices $7 a ton, and in some quarters it is predicted there will be no great improvement in the situation until this is done. A good movement in light and heavy rails has been in evidence in the past week, and mills are disposed to hold prices for the former product more firmly than has been the case recently. Bar iron is strong at 1.35c Chicago, a fair demand existing. There is a possibility of an advance in the near future because of the high prices of scrap, which are out of proportion with the price obtained for the finished material or with conditions in other lines. Merchant pipe and boiler tubes are fairly active, the readjustment of the prices for merchant pipe having increased demand for this material. There is an excellent demand for nails and fencing from all parts of the West and Southwest, jobbers in these sections reporting their stocks very low. Transactions in pig iron in the past week have been numerous enough to warrant an optimistic view of the outlook. The melt has greatly increased since the first of September, and neither Northern nor Southern furnaces are suffering for the want of shipping instructions. Coke is unchanged as to price and is moving freely.

Pig Iron.—Very little change has occurred in the local situation during the past week. Inquiry includes several lots of 1,000 to 1,500 tons. New tonnage placed on furnace books is not heavy, most of the business being done by the two local interests which are selling Northern iron for future shipment on a sliding scale. Southern furnaces will not consider business for 1905 delivery, and owing to the coal miners' strike in Alabama, few are in position to make bids on orders for shipment in the last three months of the present year. The Sloss-Sheffield Co. is the only large producer that is now taking orders for last quarter shipment, which it commenced doing last week. Prices are being held firm on the basis of $13.50 for Northern No. 2 foundry, and $13.15 for Southern No. 2. All low priced irons seem to have been disposed of, as furnaces that have been making the offerings report their withdrawal from the market with full order books. We quote as follows:

Lake Superior Charcoal	$ 15 00
Northern Coke Foundry No. 1	14 00
Northern Coke Foundry No. 2	13 50
Northern Coke Foundry No. 3	13 00
Northern Scotch Foundry	15 00 to 15 50
Ohio Strong Softeners No. 1	14 50 to 15 00
Ohio Strong Softeners No. 2	14 00 to 14 50
Southern Coke Foundry No. 1	13 65
Southern Coke Foundry No. 2	13 15
Southern Coke Foundry No. 3	12 90
Southern Coke Foundry No. 4	12 65
Southern No. 1 Soft	13 65
Southern No. 2 Soft	13 15
Southern Gray Forge	12 65
Southern Mottled	12 40
Southern Silveries (4% to 6% Silicon)	14 85 to 15 85
Jackson Co. Silveries (8% to 10% Silicon)	17 80 to 18 30
Alabama and Georgia Car Wheel	18 85 to 19 35
Malleable Bessemer	13 50 to 14 00
Alabama Basic	13 15 to 13 40

Billets.—There is nothing of interest to report regarding this material. Demand is of a very limited nature, owing to the uncertainty as to the course of prices. There is some inquiry for small lots of forging billets, which can generally be obtained at about $2 below pool prices. We continue to quote association prices: Bessemer and open-hearth billets, 4 x 4 and larger, up to .25 carbon, $24; up to and including .60 carbon, $1 extra. Billets, 3⅞ inches and smaller, and sheet and tin bars, $25. Wire rods, $28 to $29.

Bars.—The mills of the Republic Iron & Steel Co. were started up again yesterday following the agreement which was reached last week with officials of the Amalgamated Association. The company has accumulated a good tonnage in new business during the suspension, and is in no fear of another shut-down. The bar iron situation is being seriously affected at the present time by the high prices of scrap, and some producers believe there must be an advance unless there is a reduction in old material. At the present time, 1.35c Chicago is firmly maintained. Specifications for steel bars have slackened owing to the uncertainty as to prices. The International Harvester Co. announces that its three Chicago plants will remain idle for some weeks longer. In the meantime it is still offering the surplus tonnage of its steel mill at a price that will bring the amount of business requisite to keep this plant in continuous operation. Demand for small angles and hoops is quiet, and on hard steel angles rolled from old rails some low prices are made, reports of less than 1.20c at the mill being current. We quote iron bars, 1.35c Chicago; soft steel bars, 1.40c to 1.51½c; soft steel angles, less than 3 x 3, 1.61½c; hoops, 1.71½c. On small lots from store, we quote bar iron, 1.75c base, full extras; steel bars, 1.70c to 1.80c base, half extras; hoops, 2.10c rates full extras.

Sheets.—The local market remains in a state bordering on apathy, buyers continuing to cover for their wants on the hand-to-mouth policy. Prices are in an unsettled state, and our quotations may be shaded with some mills about $1 a ton. With this reservation, we quote one pass, cold rolled, blue annealed sheets, carload lots, mill shipments, Chicago delivery, as follows: Nos. 9 and 10, 1.77½c to 1.79½c; Nos. 11 and 12, 1.79½c to 1.86½c; Nos. 13 and 14, 1.86½c to 1.91½c; Nos. 15 and 16, 1.89½c to 2.01½c. On box annealed, one pass, cold rolled: Nos. 18 and 20, 2.01c to 2.06½c; Nos. 22 and 24, 2.06½c to 2.11½c; Nos. 25 and 26, 2.11½c to 2.16½c; No. 27, 2.16½c to 2.21½c; No. 28, 2.26½c to 2.31½c; No. 29, 2.41½c to 2.46½c; No. 30, 2.51½c to 2.56½c. We have revised our prices on lots from Jobbers' stocks, which are $2 a ton lower than a week ago. We quote No. 10, 1.90c to 2c; No. 12, 1.95c to 2.05c; No. 14, 2c to 2.10c; No. 16, 2.10c to 2.20c; No. 18, 2.20c to 2.30c; No. 20, 2.25c to 2.35c; No. 22, 2.30c to 2.40c; No. 24, 2.35c to 2.45c; No. 26, 2.40c to 2.50c; No. 27, 2.50c to 2.60c; No. 28, 2.60c to 2.70c; No. 29, 2.70c to 2.80c. Galvanized sheets are improving, and we quote Pittsburg discounts, f. o. b. mill, 80 and 5 to 80 and 10. For shipment from stock, we quote heavy gauges and wide widths, 75 and 5 to 75 and 10 percent; for light gauges, 75, 10 and 5½ percent to 80 percent.

Structural Steel.—The change in prices amounting to $4 a ton, announced by the association last week, has not stimulated demand to any extent. The only contract of importance that has been let in the past week was one for 1,100 tons of shapes required for the Grower building, to be erected in this city, the contract for which went to the American Bridge Co. In small lots, business shows good volume, and the outlook has a rosier hue. We have revised our prices and quote carload lots, Chicago delivery, as follows; Beams and channels, 15 in. and under, 1.56½c; angles, 3 to 6 in. inclusive, 1.56½c; zees, 3 in. and over, 1.56½c; tees, 3 in. and over, 1.61½c. On lots from store, we quote beams, channels and angles, 3 x 3 and larger, 1.80c to 1.90c; beams, 18, 20 and 24 in., 10c extra; tees, 5c extra.

Plates.—No material improvement has been noticed in the demand for this product since the reductions ranging from $4 to $6 a ton were announced last Tuesday. We have revised our prices and quote on carload lots, Chicago delivery, as follows: Tank steel, ¼ in. and heavier, 24 in. wide and under, rectangular plates only, 1.46½c base; over 24 in. to 100 in. wide, 1.56½c base; flange steel, 1.66½c base; marine steel, 1.76½c base, all full extras. Plates, 3-16 in. thick, $2 extra; gauges 7 and 8, $3 extra; No. 9, $5 extra. Less than carload lots, 5c extra. Prices from store have also been changed, and we quote tank steel, ¼ in. and heavier, 1.80c to 1.90c; 3-16, 1.90c to 2c; No. 8, 1.90c to 2c; flange steel, 2.05c to 2.15c.

Rails and Track Supplies.—New tonnage keeps coming forward in heavy rails, Steel Corporation mills closing about 10,000 tons in the week under review. Light rails are in much better condition than has been the case for some weeks, although in certain sections of the South very low prices are still being made. In general, however, the market is stiffer. Track supplies are moving freely. We quote as follows: Heavy sections, 500 tons and over, $28; less than 500 tons to carload lots, $30; less than carload lots, $32; second quality rails, $27; light rails, $22 to $24; track supplies, f. o. b. Joliet mill, angle bars, 1.35c; spikes, first quality, 1.65c to 1.75c; track bolts, 3½ x ¾, with square nuts, 2.20c to 2.30c per 100 lb.; with hexagon nuts, 2.35c to 2.45c.

Merchant Steel.—There is little of importance to report regarding transactions in any of the following products in the past week. Prices are firm and specifications of good volume. We continue to quote carload lots, mill shipments, Chicago delivery, as follows: Spring steel, 1.90c; sleigh shoe, flat sizes, 1.56½c; concave and convex, 1.76½c; cutter shoe, 2.25c; smooth finished machinery steel, 1.76½c base; smooth finished tire, 1.71½c; plow steel, 2.20c and upward according to quality; toe calk, 2.06½c base. Ordinary grades of crucible tool steel, 6½c to 8c; special tool steel, 12c up. Cold rolled shafting, 52 percent from list in carload lots, and 47 percent discount in less than carload lots.

Merchant Pipe.—Since the readjustment in prices, producers report an improvement in the demand for all sizes of merchant pipe. We quote carload lots, mill shipments, random lengths, f. o. b. Chicago, as follows:

MERCHANT PIPE.

	Steel Pipe		Guaranteed Wrought Iron Pipe.	
	Black. Percent.	Galv. Percent.	Black. Percent.	Galv. Percent.
⅛ and ¼ inches	69.35	53.35	67.35	51.35
⅜ and ½ inches	73.35	71.35	71.35	69.35
¾ to 6 inches	77.35	67.35	75.85	65.85
7 to 12 inches	72.35	57.35	70.85	55.85

Boiler Tubes.—A satisfactory tonnage continues to come forward, neither jobbers nor mills having any complaint to make regarding the volume of business. Prices are without change, and we quote carload lots, mill shipments, as follows:

BOILER TUBES.

	L. W. Steel. Percent.	C. C. Iron. Percent.	Seamless Steel. Percent.
1 to 1½ inch	46.35	41.35	52.35
1¾ to 2¼ inch	58.35	41.35	40.35
2½ inch	60.35	46.35	43.35
2¾ inch to 5 inch	66.35	53.35	Up to 4 inches.
6 to 13 inch	58.35	41.35	50.85

The following are the agreed discounts from store, Chicago:

	Steel.	Iron.	Seamless Steel.
1 to 1½ inches	42½	37½	40
1¾ to 2¼ inches	52½	35	37½
2½ inches	55	37½	40
2¾ to 5 inches	62½	47½	47½
6 inches and larger	52½	35	..

Cast Iron Pipe.—None of the transactions reported as pending in our last report had been closed to date. An additional inquiry has come from the town of Rockport, Ohio, for 800 tons of 6-in., 8-in. and 10-in. pipe, the contract for which will be let this week. Prices are without change, and we quote carload lots, Chicago delivery: 4-in. water pipe, $25.50; 6-in. to 12-in. $24.50; larger sizes, $24; gas pipe, $1 a ton higher.

Wire Products.—Producers continue to report a heavy demand, jobbers west and southwest of the Mississippi river having little or no stocks on hand. Nails and fencing are in

chief demand, and mills are compelled to divide their output to meet the most pressing wants. We quote carload lots to jobbers, mill shipments, Chicago delivery, as follows: Wire nails, 1.75c; painted barb wire, 1.90c; galvanized barb wire, 2.20c; smooth annealed wire, 1.60c; smooth galvanized wire, 1.90c; polished staples, 1.85c; galvanized staples, 2.15c. Less than carload lots to jobbers are 5 cents higher than above prices. The retail trade is quoted 5 cents extra over the foregoing on carload lots, and 10 cents extra on less than carload lots. Bale ties are unchanged at 82½ and 5 percent discount f. o. b. Waukegan, Ill., on straight carload lots. Poultry netting, 85 and 5 percent discount from list f. o. b. Joliet or DeKalb, with actual freight allowed not exceeding 50 cents per 100 pounds.

Coke.—Foundry cokes are in good demand, and while the buying is not of heavy proportions, it includes a large number of small orders We quote coke from Wise county (Va.) ovens, $2 to $2.15 at the ovens, or $4.25 to $4.35 Chicago. Coke from the Pocahontas and New River districts, the freight rate of which is $2.65 to Chicago, is offered in this market on the basis of $1.80 to $1.90 at the ovens. Standard 72-hour Connellsville grades are firm at $2 at the ovens, or $4.65 Chicago. Solvay coke from the Milwaukee plant is selling at $4.50 Chicago.

Old Material.—Nearly 8,000 tons of scrap has been offered in this market in the past week by Western railroads, 6,500 tons of which is from the Santa Fe, 600 tons from the Pere Marquette and 650 tons from the Rock Island system. Dealers' prices continue to maintain their past high levels, advances having been made in the past week in old iron rails, old steel rails less than four feet, No. 1 cast, boiler punchings, cast and mixed borings, and stove plate. We have revised these quotations and quote dealers' selling prices as follows:

Old iron rails	$15 75 to 16 25
Old steel rails (4 feet and over)	11 50 to 12 00
Old steel rails (less than 4 feet)	10 50 to 11 00
Relaying rails, subject to inspection	21 50 to 22 50
Relaying rails for sidetracks	18 00 to 20 00
Old wheels	11 00 to 12 00
Heavy melting steel	9 50 to 10.00
Mixed country steel	7 00 to 7 50

The following quotations are for net tons:

Low phosphorus scrap (.04 and under)	$12 00 to 13 00
No. 1 R. R. wrought	12 00 to 12 50
No. 2 R. R. wrought	11 00 to 11 50
Shafting	12 50 to 13 00
Dealers' Forge, No. 1	9 00 to 10 00
Wrought pipe and flues	8 00 to 8 50
No. 1 cast, 150 lb. and less	10 50 to 11 00
Heavy cast	8 00 to 8 25
No. 1 mill	6 00 to 6 50
Country sheet	5 00 to 5 50
No. 1 boilers, cut	7 50 to 8 00
Boiler punchings	9 50 to 10 00
Iron car axles	15 50 to 16 00
Steel car axles	13 50 to 14 00
Iron axle turnings	7 50 to 8 00
Steel axle turnings	7 00 to 7 50
Cast borings	4 35 to 4 75
Mixed borings, etc.	4 35 to 4 75
Wrought turnings	7 00 to 7 50
Machine shop turnings	7 00 to 7 50
Railroad malleable	9 00 to 9 50
Agricultural malleable	8 50 to 9 00
Stove plate and light cast scrap	8 50 to 9 00
Old iron splice bars	13 00 to 13 50

CLEVELAND.

OFFICE OF *The Iron Trade Review*,
1064 ROSE BUILDING, Sept. 14.

Iron Ore—Sales are proceeding very slowly, as some furnaces are still in doubt as to what their requirements will be and are of the opinion that there is still ample time in which to place orders. Prices range from $2.35 to $2.50 for non-Bessemer Mesabis, $2.75 to $3 for old range non-Bessemers, while old range Bessemers sell at $3 to $3.25 and Mesabi Bessemers at $2.75 to $3. Although freight rates on ore—65 cents from the head of the lakes, 55 from Marquette and 50 from Escanaba—are considered low by vesselmen, ore is moving freely and furnishes the most satisfactory part of lake business. Last September, owing to troubles with masters and mates, which tied up about 50 vessels for some days, the shipments of ore were only 2,946,639 tons, but in September, 1902, the total was 3,657,080 and present indications are that the total for this month will be at least 3,500,000. Estimating the shipments for October, November and December at 6,000,000 tons, the total for the season would be about 19,000,000 tons. It is not expected, however, that the amount will exceed 18,000,000.

Pig Iron.—Some buyers are showing a disposition to send in inquiries extending farther into next year than they had been doing until very recently. Whether this is due to conviction that prices will not be lower and that now is the time to buy, or is merely to satisfy curiosity as to what quotations could be obtained, is not entirely clear. As furnaces are not inclined to quote for delivery after January 1, the inquiries have not brought replies satisfactory to the buyers and contracts have not resulted. It can at least be said that there is considerable interest in the market, and the indifference of buyers of a few weeks ago has disappeared. Some foundrymen are urging immediate shipment, saying that their supply of pig iron is very low. Prices show little change. Basic commands about $11.75 at Valley furnace and there is an encouraging increase in inquiries, several for large tonnages having been sent out. In No. 2 foundry, one company reports the sale of 2,000 tons at an advance of 30 cents over the price at which it sold three or four weeks ago, but the price is not quotably different, being from $11.75 to $12 at the Valley plants. The local price for Cleveland delivery is still $12.25 to $12:50 for No. 2 at the stacks. There is little demand for Southern brands, which are firm at $9.25 to $9.50, Birmingham, for No. 2. We quote as follows for Cleveland delivery:

Bessemer	$12 60 to 13 75
No. 1 Strong Foundry	12 85 to 13 00
No. 2 Strong Foundry	12 60 to 12 85
No. 3 Foundry	12 25 to 12 50
No. 2 Southern	13 10 to 13 35
Gray Forge	11 85 to 12 00
Gray Forge, Southern	12 00 to 12 15
Lake Superior charcoal	14 50 to 15 00

Finished Material.—The reductions of prices of plates and shapes have brought out some new business and improved the tone of the market to some extent, but there has been no decided change, nor is any expected until after the prices of billets and bars have been readjusted. The announcement that action would probably be taken this week on billets and bars has prevented sales except to meet most urgent requirements and such orders have been filled through jobbers, as a rule. Bar iron is dull and prices are irregular. The usual quotation is 1.25c at the mill. Sheets are not in strong demand and announced prices are freely shaded. The prices of the principal producers through jobbers are as follows, Cleveland delivery, the freight from Pittsburg being 9½ cents. Mill sales of black sheets in carload lots, No. 10, 1.64½c; No. 11-12, 1.69½c; No. 14, 1.79½c; No. 16, 1.89½c; No. 27, 2.14½c; No. 28, 2.24½c. Galvanized, mill sales, No. 14, 2.24½c; No. 16, 2.34½c; No. 18-20, 2.49½c; No. 22-24, 2.64½c; No. 25-26, 2.84½c; No. 27, 3.04½c; No. 28, 3.24½c. Out of stock, black sheets: ¼-inch, 1.90c; 3-16-inch, 2c. Blue annealed: No. 10, 2.05c; No. 12, 2.10c; No. 14, 2.15c; No. 16, 2.25c. One pass cold rolled: No. 18-20, 2.35c; No. 22-24, 2.40c; No. 26, 2.45c; No. 27, 2.50c; No. 28, 2.60c; No. 30, 3c. Galvanized out of stock: No. 16, 2.60c; No. 18-20, 2.70c; No. 22-24, 2.85c; No. 26, 3.05c No. 27, 3.25c; No. 28, 3.45c; No. 30, 4.25c.

Old Material.—No. 1 railroad wrought has advanced 50 cents to $1, and cast borings $1. Other prices are unchanged and the demand does not increase in any marked degree. We quote as follows, gross tons, Cleveland:

Old iron rails	$15 00 to 15 50
Old steel rails (over 6 feet)	12 00 to 13 00
Old steel rails (under 6 feet)	11 00 to 12 00
Old car wheels	10 00 to 11 00
Steel boiler plate	9 00 to 10 00
Malleable iron (railroad)	10 00 to 10 50
Malleable iron (agricultural)	8 00 to 9 00
Heavy steel	10 00 to 11 00

We quote as follows, net tons:

No. 1 R. R. wrought	$10 50 to 11 50
No. 1 busheling	9 50 to 10 00
No. 1 machine cast	9 50 to 10 50
Iron axles	16 00 to 16 50
Axle turnings	7 00 to 8 00
Wrought turnings (free from cast)	6 00 to 6 50
Grate bars	7 00 to 8 00
Pipes and flues	8 00 to 8 50
Tank iron	7 50 to 8 00
Hoop and band iron	5 00 to 5 50
Sheet iron	4 00 to 5 00
Wrought drillings	6 00 to 6 50
Stove plate	8 00 to 9 00
Steel axles	13 00 to 14 00
Cast borings	5 00 to 5 50

CINCINNATI.

Sept. 13.

The coke market shows no change and continues quiet with foundry coke quoted at $1.90 to $2.05 f. o. b. Connellsville. The demand for coke from the Stonega district is less active, as the Birmingham furnaces that were using this coke or figuring on it for their supply, are in some cases getting enough out of their own ovens now, while others have found that the shipments from the Virginia ovens were so irregular that they could not depend on this source of supply for the operation of the furnaces and have decided to blow out for the present.

Pig Iron.—The market this week offers but little in the way of new features worthy of comment. The demand has been light and the orders are mainly for small lots from a carload up to 100 tons, with the larger amount the exception. One sale of 1,000 tons of foundry iron is reported with deliveries at the rate of 200 tons per week. This and another sale of 500 tons for prompt shipment are the only large sales given out. Inquiry is light. Aside from a pending inquiry from a large electrical and railroad supply manufacturer for a tonnage of about 4,000 tons and one from another large interest wanting 2,000 tons of gray forge, there is little to be figured on. Prices are unchanged and Southern iron is still quoted at $9.25 Birmingham basis, with furnaces in the Birmingham district, strictly speaking, asking $9.50 for No. 2 foundry. Ohio furnaces still adhere to $12 for No. 2 as an asking price, but this can be shaded and $11.50 is done occasionally under pressure. Reports from men who have traveled the territory in the past week are to the effect that the melt is light and that consumption does not seem to show signs of increasing. In the face of these conditions the trade has a hopeful feeling and even assert that things are better, without ability to give definite reason for the assertion. It is intimated that one of the leading producers in the South will advance prices 50 cents in the near future and make $10 an asking figure for No. 2 foundry. The lower grades continue relatively firmer than the top grades and No. 4 and gray forge are strong at the quotation with rather limited offerings. We quote in carload lots f. o. b. Cincinnati:

Southern Foundry No. 1	$12 50 to 12 75
Southern Foundry No. 2	12 00 to 12 25
Southern Foundry No. 3	11 50 to 12 00
Southern Foundry No. 4	11 00 to 11 25
Southern Foundry No. 1 soft	12 50 to 12 75
Southern Foundry No. 2 soft	12 00 to 12 25
Gray Forge	11 00 to 11 25
Northern Foundry No. 1	13 15 to 13 65
Northern Foundry No. 2	12 65 to 13 15
Southern car wheel iron	16 25 to 16 50

Finished Material.—There has been a fair run of orders in a jobbing way the past week. Quotations remain unchanged. Buyers of odds and ends from the structural yards are asking for reduced prices based on the recent reductions made at the mills, but jobbers are still demanding old prices as they have no cheap material on the yards as yet and refuse to sell what they have on hand at any lower prices than were made before the mill reduction was made. Bar iron is still quoted at 1.35c; steel bars at 1.48c, half extras, with dealers quoting 1.60c to 1.75c for iron and steel out of store. Galvanized sheets are at 75 and 10 to 75, 5 and 2½ percent off. We quote black sheets, No. 27, at 2.25c in car lots of 500 bundles. Black sheets out of store are selling as follows: No. 28, 2.60c; No. 27, 2.50c; No. 16, 2.30c; No. 14, 2.20c; No. 12, 2.10c; No. 10, 2.05c. Tank plates are dull and sell out of store at 2c for ¼-inch, 3-16-inch, No. 8 and No. 10. Beams and channels are quoted at 2c from stock and angles at 1.90c to 2c for base sizes.

In merchant pipe there has been no change in the situation. The readjustment of prices last week has had no effect as yet on the trade and demand is only fair. Carload lots are quoted as follows f. o. b. Cincinnati:

MERCHANT PIPE.

(Basing Discounts.)

	Steel Pipe. Black. Percent.	Steel Pipe. Galv. Percent.	Guaranteed Wrought Iron Pipe. Black. Percent.	Guaranteed Wrought Iron Pipe. Galv. Percent.
⅛, ¼ inch	69.7	53.7	67.7	51.7
⅜, ½ inch	73.7	61.7	71.7	59.7
¾ to 6 inch, inclusive	77.7	67.7	76.2	66.2
7 to 12 inch, inclusive	72.7	57.7	71.2	55.7

BOILER TUBES.

	Steel Percent.	Iron Percent.
to 1½ inch	41.2	37.7
1¾ to 2¼ inch	54.2	36.7
2½ inch	56.7	41.7
2¾ to 5 inch	63.2	49.2
6 to 13 inch	54.2	36.7

Old Material.—The market continues quiet and unchanged with no demand to speak of and it is practically a buyer's market with prices largely nominal. We quote:

Old No. 1 railroad wrought, net tons	$11 00 to 11 50
Cast machine and foundry, net tons	9 50 to 10 00
Old iron rails, gross tons	12 50 to 13 00
Old steel rails, gross tons	9 50 to 10 00
Old short lengths, gross tons	10 00 to 10 50
Old iron axles, net tons	13 50 to 14 00
Stove plate, net tons	6 00 to 6 50
Wrought turnings, net tons	6 00 to 6 50
Cast borings, net tons	2 00 to 2 50

NEW YORK.

OFFICE OF *The Iron Trade Review*,
ROOM 1315, No. 150 NASSAU ST., Sept. 13.

Pig Iron.—There was no change in the local pig iron market in the past week. Orders aggregate only a fair tonnage, with Northern irons leading. Most of the buying was by New England interests. Of inquiries in the market, one for 600 tons and one for 1,000 tons comprise all worth mentioning. Northern furnaces are shading prices where a good order is possible. Southern makers are selling very little iron hereabouts. The general run of Southern furnaces are quoting $9.50 Birmingham for No. 2 foundry, for delivery the remainder of the year. Some of them have been asked whether their present schedules would be considered on orders calling for delivery the early part of next year, but such inquiries have been answered in the negative. The general run of buyers are still ordering from month to month and current business rarely calls for delivery later than sixty days. New York quotations follow: Northern No. 1 X, $14.50 to $15; No. 2 X, $14 to $14.50; No. 2 plain, $13.50 to $14; Southern No. 1 foundry, $13.50 to $13.75; No. 2 foundry, $13 to $13.25; No. 3 foundry, $12.50 to $12.75; No. 4 foundry, $12.25 to $12.50.

Rails.—Business is quiet. No orders of any consequence have been taken in the week and the immediate future offers little hope of a change. Standard sections remain $28 at mill.

Finished Iron and Steel.—The reductions commenced last week in structural shapes and plates have not been followed by any awakening in business so far. The belief prevails in many quarters that a more drastic cut in prices should have been made. Some buyers say a base of 1.25c would have been advisable, while there are other who talk of even a lower figure. Manufacturers suggest that such talk is in keeping with that which has been indulged in after every reduction. It can be said on good authority that the new schedule for fabricating and erecting is approximately $12 and $10 respectively. It can be said that the Lackawanna Steel Co. has not yet begun to roll structural shapes, but expects to do so in about a week. It is experimenting with its rolls now. Whether the company will furnish fabricated material has not been definitely decided. The demand for plates continues light. Bars are only fairly active, chiefly because of an expected reduction in price, which good authority says will not exceed $1 per ton, in view of the $6 reduction made last November. Sheets are very quiet, but prices seem to be holding pretty well. New York prices at tidewater follow: Angles 3 to 6 in. x ¼ in. and heavier, 1.54½c; beams, 3 to 15 in., 1.54½c; channels, 3 to 15 in., 1.54½c; beams, 18, 20 and 24 in., 1.64½; tees, 3 x ¼ in. and heavier, 1.59¼c; plates, carloads, tank, 1.54½c; flange, 1.64½c; marine and ordinary fire box, 1.74½c; refined iron and soft steel bars, 1.49½c; sheets, in carload lots New York, No. 28, black, 2.25c to 2.30c; galvanized, 3.25c to 3.30c.

Old Material.—The general tone of the market is not as strong as a week ago. Some holders have been sellers recently and dealers who wanted to increase their stocks have been enabled to do so at lower prices than those generally quoted. Heavy steel scrap finds a ready market, and once the long expected boom sets in this is considered the likely leader. In other branches of the market

there is nothing of interest to report. Prices f. o. b. cars follow:

Old iron rails	$14 00 to 14 50
Old steel rails, long lengths	11 50 to 12 00
Old steel rails, short pieces	11 00 to 11 50
Relaying rails	19 00 to 20 00
Old car wheels	11 50 to 12 50
Old iron car axles	17 00 to 18 00
Old steel car axles	14 00 to 14 50
Heavy melting steel scrap	11 50 to 12 00
No. 1 railroad wrought scrap	11 50 to 12 00
Iron track scrap	10 50 to 11 00
Wrought pipe	7 75 to 8 25
Ordinary light iron	4 50 to 5 25
Cast borings	3 50 to 4 00
Wrought turnings	5 50 to 6 00
No. 1 machinery cast	9 00 to 10 00
Stove plate	7 75 to 8 25

PHILADELPHIA.

Sept. 13.

As prices settle to a lower basis business prospects improve, but there is not yet any decided increase in orders. The meetings to consider prices of billets and bars are awaited with interest. The blast furnace report for the past month is more favorable than was expected.

Pig Iron.—Business is light, but supplies held by consumers are small and the prospect for a buying movement of good size is excellent. Prices are unchanged and we quote as follows: No. 1X foundry, $14.75 to $15.25; No. 2 X foundry, $14.25 to $14.50; No. 2 plain foundry, $13.50 to $13.75; Standard gray forge, $13 to $13.25; Ordinary gray forge, $12.50 to $12.75; basic, $12.75 to $13.00.

Finished Material.—New business has not come out rapidly since the reduction in prices of plates and shapes, but there are indications that business will improve after the last reductions have been made. We revise quotations as follows for Philadelphia and nearby deliveries: Plates ¼ inch and thicker, 1.53½c to 1.55c; plates, 28 inch and narrower, 1.43½c to 1.45c; beams, channels, angles, etc., 1.53½c to 1.55c; steel bars, 1.43½c to 1.55c; refined iron, 1.43½c to 1.48½c.

Old Material.—Considerable difference exists in the views of buyers and sellers. Holders are inclined to maintain present rates, while buyers anticipate lower quotations. Business is dull. We quote as follows: No. 1 steel scrap, $12 to $12.50; low phosphorus scrap, $16 to $16.50; old steel axles, $15 to $15.50; old iron axles, $18 to $18.50; old iron rails, $15.50 to $16; old car wheels, $12 to $12.50; choice railroad No. 1 wrought, $14 to $14.50; machinery cast, $11.50 to $12; No. 2 light scrap (forge), $10 to $10.50; No. 2 light scrap (ordinary), $8 to $8.50; axle turnings, $9 to $9.50; wrought turnings, $8.50 to $9.25; cast borings, $6.50 to $7; stove plate, $9 to $9.50; wrought iron pipe, $10.50 to $11.25.

BIRMINGHAM.

BIRMINGHAM, Ala., Sept. 12.—There is a decided improvement in the pig iron production in Alabama, three furnaces being blown in during the present month with prospects of two others being started up before the end of ten days. The Lookout Mountain Iron Co.'s furnace at Battelle, between Birmingham and Chattanooga, was lighted on Saturday. The Woodward Iron Co. has two furnaces in operation now. The Tennessee Coal, Iron & Railroad Co. expects to be able to start up two of its Bessemer, Ala., furnaces at the end of this week or the first of next week. The coal miners' strike is still on, but the furnace companies are adding more men to their non-union labor forces and are increasing their coal and coke supplies every day.

J. C. Maben, president of the Sloss-Sheffield Steel & Iron Co., announces that his company has five furnaces in operation, making a large quantity of iron, and that very little coke is now being purchased, that which is received being part of the orders given to West Virginia producers two months ago.

There are 22 furnaces in operation in this State at present, including one charcoal furnace. The production of August in Alabama, something over 83,000 tons, will be increased by at least ten to fifteen thousand tons, it is expected, this month. There is a fairly good demand for the product yet, though it is admitted that orders are in small lots. The shipments are steady. Surplus stocks in this section have been reduced some during the curtailed production period. Quotations are holding firm. Officials of the iron companies state that No. 2 foundry still holds strongly at $9.50 per ton and that there is no shading of this price, rumors to the contrary notwithstanding. Even with the production improved by three or four furnaces more in operation, it is believed that all the iron that will be made this year can be disposed of. There is not a great anxiety on the part of manufacturers in this section to push their product. Efforts of the furnacemen to start up their coal mines in the face of the strike are not lagging.

The following quotations are given: No. 1 foundry, $10; No. 2 foundry, $9.50; No. 3 foundry, $9; No. 4 foundry, $8.50; gray forge, $8 to $8.25; No. 1 soft, $10; No. 2 soft, $9.50.

The melt in the cast iron pipe trade this year promises to be larger than ever. There has been a strong demand right along and shipments have been equal to the production.

The Tennessee Coal, Iron & Railroad Co. has three departments in its Bessemer, Ala., rolling mills in operation now, non-union laborers being employed. Officials state that they can get all the labor needed for the work and that the output will be increased as the demand for finished iron and steel grows. The steel for this mill is being supplied from Ensley. No other mills in the Birmingham district are in operation.

J. D. Dwyer, formerly superintendent of the Birmingham rolling mills, has gone to Belle Island, near Richmond, Va., where he will become general manager of the plant. He will take considerable labor from this district. A large number of mill employes still remain in the Birmingham district in anticipation of a resumption of work at the mills in this section on the settlement of the iron scale.

The Metal Market.

CHICAGO.

OFFICE OF *The Iron Trade Review*,
1164 MONADNOCK BLOCK, Sept. 13.

Increasing strength is to noted in several metals, though without any change in prices as yet. Buyers feel a little more confidence in the business situation and are sounding the market more freely than they have for months. Orders in the past week have been fairly numerous, and a good buying movement is looked for. We quote prices as follows: Lake copper, carloads, 12⅞c, and for smaller lots, 13⅛c; casting, 12⅝c for carloads, and 13c for lesser quantities. Pig tin, 28¼c to 28¾c, according to quantity. Spelter, 5⅛c to 5⅜c, according to quantity; sheet zinc, 6c for carload lots of 600-pound casks, and 6.25c to 6.35c for less than carload lots. Pig lead, 4.20c for 50-ton lots, 4.25c for carload lots, and 4.35c for smaller lots.

Old metals are firm, demand seeming to be on the increase. Prices are without quotable change, as follows: Copper wire and heavy, 11c; copper bottoms, 9¾c; copper clips, 10¾c; red brass, 9½c; red brass borings, 7¾c; yellow brass, heavy, 7¼c; yellow brass borings, 6¼c; light brass, 5½c; tea lead, 3½c; zinc, 3.55c.

NEW YORK.

OFFICE OF *The Iron Trade Review*,
ROOM 1315, NO. 150 NASSAU ST., Sept. 13.

Pig Tin.—Although the market has fluctuated considerably during the past week, closing prices today are about the same as a week ago for spot, while for futures they are slightly higher. Business conditions, however, continue quiet. The London market for the week has been firm, especially in futures. Closing prices to day follow: Spot, Sept. and Oct., 27½c to 27¾c. London's closings today follow: Spot, £126 5s; futures, £126 17s 6d. Arrivals for the month to date aggregate 1,190 tons, with 1,545 tons afloat.

Copper.—The market has been quiet during the past week, but prices show no change. In trade circles there is nothing of importance to note outside of export sales, which continue excellent. The London market during the week has been featureless, prices being about the same as a week ago. Closing prices today follow: Lake, 12 5-8c to 12¾c; electrolytic, 12½c to 12¾c; casting, 12⅜c to 12½c. London's closings today follow: Spot, £57 7s

6d; futures, £57 10s. Exports for the month aggregate 4,203 tons.

Lead.—Remains quiet and unchanged, spot selling at 4.20c to 4.30c. St. Louis and London are firm at 4⅛c and £11 16s 3d, respectively.

Spelter.—Is higher and more active, spot commanding 5.10c to 5.20c. St. Louis is strong at 4.95c. London weaker at £22 10s.

Antimony.—Both Cookson's and Hallett's are 7c asked. Other grades are 6c asked.

Quicksilver.—We quote $42 per flask of 76½ pounds in lots of 100 flasks. London is £7 15s.

Nickel.—Sales are made at 40c to 47c for large lots down to a ton, and at 50c to 60c for smaller quantities.

LaBelle Iron Works Report.

(Special Telegram.)

PITTSBURG, Sept. 14.—The annual meeting of stockholders of the LaBelle Iron Works, Steubenville, O., was held at Wheeling yesterday. The annual report for the year ending June 30 shows net earnings of $474,009.66, an excellent showing in view of the depressed market and the difficulties under which work at the new plant has been prosecuted. The capital of the company is $7,000,000, with a bonded indebtedness of $2,500,000, the latter bearing 6 percent interest. After paying interest on bonds the earnings are almost 5 percent on the capital stock. The assets are put at $10,588,062.69. The real estate is assessed at $7,052,360.03; the coal properties at $366,213.03; coke properties at $479,257.08; ore property at $328,489.70; and limestone at $24,967.70. For inventory depreciation $344,003.08 is charged. The gross amount of sales was $6,610,300. Sales of pipe during the year amounted to 38,334 tons. The board of directors was unanimously re-elected as follows: A. J. Clarke, N. E. Whitaker, A. S. List, H. C. Frenzheim, A. H. Woodward, J. E. Wright, W. S. Foltz, D. J. Sinclair, D. M. Mudge, I. M. Scott, S. M. Greer Officers were re-elected as follows: I. M. Scott, president; D. M. Mudge, vice president and general sales agent; W. S. Westphall, secretary; W. S. Crawford, general manager; A. J. Clarke, chairman of the board of directors.

Shipbuilding Plants Sold.

James Smith Jr., receiver of the United States Shipbuilding Co., acting as special master, sold Sept. 8 at auction the real and personal property of the Crescent Shipbuilding Co. and the Samuel L. Moore & Sons Co., at Elizabethport. William Nelson Cromwell, representing George R. Sheldon, of the Sheldon reorganization committee, was the only bidder, and made the purchase at the price fixed in the court's decree. The Crescent company brought $125,000 for the realty and $25,000 for the personalty. The Moore plant was bid in for $175,000 for realty and $30,000 for the personal property. The sale was made in four separate parcels. There were present at the sale Charles M. Schwab and Oliver Wrenn, Schwab's secretary; William W. Green, counsel for the Mercantile Trust Co.; Paul E. De Favre, of Guthrie, Cravath & Henderson, representing Mr. Schwab; Archibald Johnson, secretary of the Bethlehem Steel Co., and Joseph H. Blanchard, secretary of the Crescent company.

J. G. Butler Jr., chairman of the Bessemer Pig Iron Association, states that on Sept. 1 out of 187 stacks using Lake Superior ore and reporting to the association, 120 were in and 67 out. The daily capacity of the entire 187 stacks is 58,350 tons. The active capacity is 38,360 tons daily, and the idle capacity 15,044 tons, showing an idle capacity of 28 percent Sept. 1.

The Fort Wayne Iron & Steel Co., Fort Wayne, Ind., is building an addition which will increase its capacity about 15 tons per day. The company manufactures bar and band iron and has an annual capacity of 50,000 tons.

The Eastwood & Mankan foundry at Sherman, Tex., burned Sept. 9. The loss on building and machinery is $20,000; insurance, $12,000.

A BOOK ON THE BARABOO IRON RANGE.

"The Baraboo Iron Bearing District of Wisconsin" is the title of Bulletin No. 13 of the Wisconsin Geological and Natural History Survey. The author is Samuel Weidman, geologist of the survey. The book is an octavo of 200 pages with 23 illustrations including a map of the Baraboo district. It is issued in paper binding at 10 cents and in cloth binding at 20 cents, and will be sent on application to the director of the survey at Madison, Wis.

The Baraboo district has attracted no little attention from Lake Superior iron mining men in the past 18 months and opinions differ as to the extent of the ore-bearing formation. The question of importance is whether the Baraboo range will endure such demands as are steadily made upon well known mines on the older ranges. The district lies near the center of the southern half of Wisconsin in Sauk and Columbia counties. The length east and west is approximately 28 miles and the width varies from two miles at the east end to ten and twelve miles in the middle and at the west end. The area is approximately 225 square miles. The Baraboo quartzite ranges extending east and west occupy much the larger portion of the district. The principal rock formations appearing at the surface are the Baraboo quartzite, the Potsdam sandstone and the glacial drift. The formations not occurring at the surface and found only by exploration are the Seeley slate and the Freedom ore-bearing formation. Throughout the district the ore-bearing strata nowhere appear at the surface, but lie buried beneath sandstone and drift varying from a few feet to over 600 feet in thickness. Two mines are shown on the map of the district, the best known being the Illinois, operated by well known Chicago interests, while a little northeast is the Sauk mine.

Iron ore was first discovered in the Baraboo district by W. G. LaRue in April, 1900. The ore was found on the Douglas farm and the first exploration, known as the Douglas mine, was made in the vicinity of the present Illinois mine. Iron-bearing slate and chert had been struck in the well at the Douglas farmhouse. Dr. Weidman believes that on account of the location of the iron ores of the Baraboo district below the belt of weathering, hydration of the ore will be found to be of slight extent. The ore is usually of Bessemer grade and is mainly red hematite with a small amount of hydrated hematite. It is more like the hard ores of the old ranges than the soft hydrated hematite of the Mesabi range. Analyses of the ore from the Illinois mine have shown from 50 to 62.8 percent of iron. We shall have more to say about recent developments on the Baraboo range on a later occasion. Further reference to the book and its contents is therefore deferred.

N. F. A. Annual Meeting.

The National Founders' Association, by the decision of a meeting of the administrative council just held at Detroit, will hold its annual meeting in Cincinnati in the third week of November. The administrative council will meet on Monday and Tuesday, Nov. 14 and 15, and the association on Nov. 16 and 17. Headquarters will probably be at the Grand hotel. The year has been one of interesting developments in the work of the association, particularly in respect to the New York agreement between the molders' union and the foundrymen. There have been, moreover, a number of sharp contests between the two organizations, and the result has not been favorable to the advancement of comity and conciliation. The events of the past ten months will give a peculiar interest to the proceedings of the Cincinnati meeting.

The Dominion Iron & Steel Co., Sydney, Cape Breton, advises us that it now has most of the machinery for its rail mill on the ground; the balance of it is ordered and will be delivered inside of the next sixty days. This mill the company expects to start early next year. Its capacity will be 1,000 tons per day. At the present time the rod mill is operating and turning out from 110 to 130 tons per shift.

The Shenango tin plate plant of the American Sheet & Tin Plate Co., New Castle, Pa., started in full this week.

COMPRESSED AIR DISPELS STEAM CLOUDS.

The two half-tones show the "before and after" stages in the renovation of the North Amherst, O., quarry of the Cleveland Stone Co. Under the old methods steam was used to operate all the machinery and Fig. 1 is from an actual photograph taken under those conditions. Fig. 2 is a picture of the same quarry after the installation of a central compressed air plant. The entire equipment is now air operated and the illustrations tell as nothing else can do nearly so well the change that has taken place from the old condition of steam-clouded air. There are great gains asserted for the new plant over the expense of operating the old one, but this story of economy may be obtained in pamphlet form from the Ingersoll-Sergeant Drill Co., of New York, engineer and constructor of the entire installation.

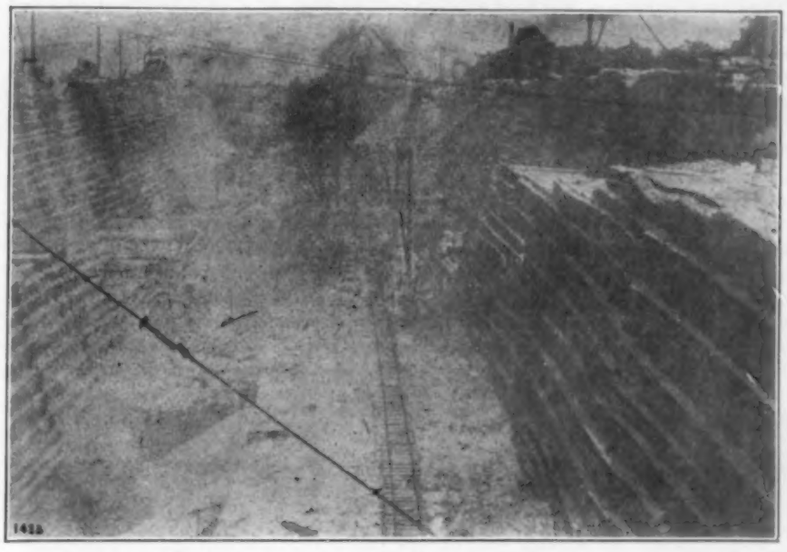

FIG. 1.—THE NORTH AMHERST, O. QUARRY OF THE CLEVELAND STONE CO. AS OPERATED BY STEAM.

Purchases for the Panama Canal.

Secretary D. I. Murphy, of the Panama Canal Commission, says concerning the commission's plans for making purchases:

"Mr. E. A. Drake, second vice president of the Panama railroad, with office at 24 State street, New York, is now acting as purchasing agent for the commission, but we shall probably soon have a purchasing agent of our own, whose headquarters will likely be in New York. When the appointment will be made, however, I cannot tell. Neither do I know what other requisitions may be made by the commission. After their return it will probably be decided whether the work of constructing the canal shall be done by the commission or whether bids shall be asked from contractors. I can't forecast which plan will be adopted. Of course, if the commission itself should undertake to do the work, in whole or in part, we would require a large amount of machinery, steam shovels, dredging machinery of all kinds, etc., while, on the other hand, if the work should be done by contract the commission would not be called on to make extensive purchases of materials. Our Government acquired, in its purchase of the canal, machinery which inventoried $29,000,000. It consisted of locomotives, dredges, dredging machinery, dumping cars and about every conceivable thing used, but the first impressions were that it was of not much value. A thorough examination shows that at least $4,000,000 worth of the machinery is very good, and can be used. What has been done by the commission up to the present time is largely preliminary, and it must be several months yet before active work can be commenced all along the line."

FIG. 2.—THE QUARRY OPERATED BY A COMPRESSED AIR PLANT.

August Building Statistics.

Building statistics for August make an exceedingly satisfactory showing. In twenty-three of the principal cities of the country, according to official reports to *Construction News*, permits were taken out for the construction of 8,072 buildings, aggregating a total cost of $24,519,227, against 6,284 buildings, involving a cost of $22,141,928, an increase of 1,788 buildings and $2,377,299 over the corresponding period a year ago, or 10 percent. The fortunate condition in the building trades becomes still more emphatic when one takes into consideration the fact that the month of July showed a gain of eighteen and June an increase of 42 percent, as compared with the corresponding months a year ago, which, with the increase of 10 percent for August, makes a phenomenal record. Further than this, the months of July and August and well up into September are usually exceedingly dull. They are in the between period, too late to begin building for fall renting and too early for the spring season.

The New York Building Trades Alliance voted against the plan proposed by its new president, William Nason, who succeeded Philip Weinseimer, to have three representatives meet the employers and try to effect a settlement of the building trouble. There has been little change in the situation, but it is evident that statements concerning the number of men on strike have been axaggerated. It is now estimated that not more than 12,000 are idle in the building trades.

The Goldschmidt Thermit Co., of New York, has completed arrangements for the manufacture in this country of its heating and welding compound. The welding process has been successfully applied since its introduction in this country, by six street railway companies for obtaining a continuous rail; by a dozen steam railroads for repairing engine frames and drivers; and by a large number of steel works to repair defective castings. At the Louisiana Purchase Exhibition the company has an exhibit in the Metal Pavilion, opposite the south corner of the Mines and Metallurgy Building. There are daily demonstrations of welding given by W. M. Carr.

B. H. Hershey, of Manheim, Pa., has been appointed receiver of the Greer-Clarkson Mfg. Co., Lancaster, Pa. The liabilities are $19,000 and the assets $15,000.

The Equipment and Construction of the Phipps Power Building at Pittsburg.*

BY GERALD E. FLANAGAN.

The primary object of the construction of the Phipps power building was the furnishing of power in various forms, from a central station, to a group of buildings closely adjacent to it upon the property of the owner, some of these buildings being already in existence, others in the nature of projects to be carried out in the future. A plot of ground 100 ft. square fronting on Cecil alley, between Penn avenue and Duquesne way, Pittsburg, was set aside for the purposes of a power building, and the designers of the structure prepared plans accordingly. This plot lies in a fairly central position with regard to the properties it is immediately designed to serve, being bounded upon three sides by ground upon which it is the intention to erect structures that will utilize the power which the present installation is capable of supplying; and, since this machinery has been constructed upon a liberal scale, looking well towards the possibilities of future demands, the troublesome question of power service has been removed once for all from any improvements to be carried out by the same interests in this vicinity. The advantages of such a central plant will be at once appreciated without need of referring to them in detail. Conspicuous among them is the fact that the basements of all other buildings are left free to be used for other purposes; and the concentration of power under one management results in the installation of a more efficient type of machinery, and a marked reduction in the number of high-priced attendants. The new office structure, known as the Bessemer building, now being supplied with light, heat and power from this center, is the forerunner of others which are soon to follow, and, in this paper, any mention of service to the Bessemer building implies like service to any others upon the Phipps property.

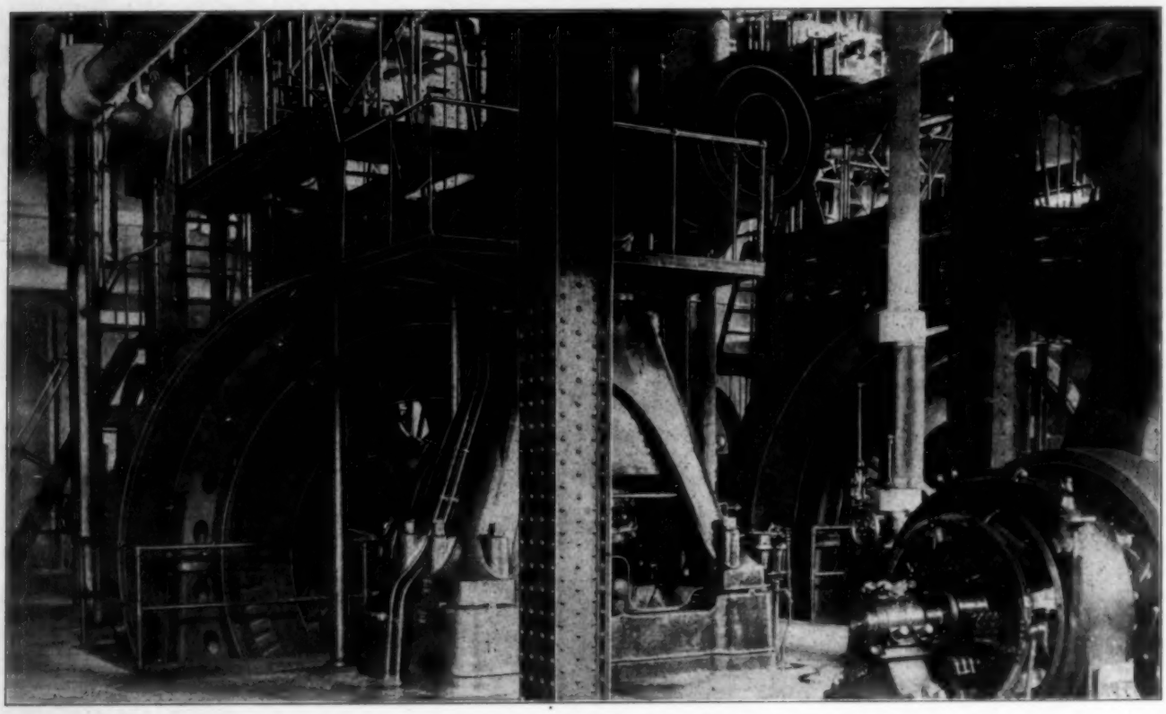

FIG. 1.—1000-K. W. WESTINGHOUSE ALTERNATORS AND ENGINES ON FIRST FLOOR.

Features of the Building.

The building in which the power generating machinery is housed is 100 ft. square and ten stories in height, of heavy steel frame and brick curtain walls with Indiana limestone trimmings. It rests upon a massive concrete foundation, which, in turn, is carried down to a solid footing upon a bed of gravel. It is built to the property line on Cecil alley, but is located a distance of four feet from the adjoining property on the side towards Penn avenue, while the other two sides face the property of the owner, and it is the intention to maintain a space of 12 ft. between them and any buildings to be erected in the future; thus giving light and air on all four sides. There are large windows on all sides which are protected by rolling steel shutters. The machinery and boiler floors are formed of concrete, between the steel beams and over them, while throughout the rest of the building the steel is covered with hollow fireproofing tile, around the columns and arched between the floor beams. These floors are then surfaced with concrete over the fireproofing. In a similar manner, the roof beams are covered with fireproofing tile and concrete, then with heavy tar paper, and surfaced with Welsh tile. This does not mean a steep-pitched roof with overlapping tile. The tile are of a hard burned clay, such as is used for vitrified sewer pipe, and they are laid upon the tar paper with flush joints filled with waterproof material, and the slope of the roof is not greater than what is required to shed water, or about one-quarter of an inch per foot.

The first three stories are 24 ft. from floor to floor, and are occupied entirely by boilers and machinery; the remainder are 13 ft. in height, and are suitable for light manufacturing, an ample supply of power in various forms being immediately available. There are two roomy passenger elevators, each of a capacity of 3,000 lb. live load, and one large freight elevator of 10,000 lb. live load capacity. The stairway is entirely of iron and steel, the treads and landings being of cast iron plates of diamond pattern. The first, or engine room, floor is nearly 6 ft. above the sidewalk, being so located as to be safely above the highest recorded flood stage, making it about 33 ft. 6 in. above pool stage of the Allegheny river, and the building is so constructed that even with the highest water there are no openings through which it can flow into the basement. As an additional safeguard, the generator foundations are so constructed that even if the basement was filled

*Read at the September meeting at Pittsburg of the Engineers' Society of Western Pennsylvania.

with water none of it could find access to these machines. The basement floor is 20 ft. 6 in. below the engine room floor, and is formed of 4 ft. of concrete over the entire surface placed directly upon the gravel. From this base rise the outer walls carrying the exterior columns, and in the center a mass of concrete forming foundations for the large engines and heavy interior columns supporting the coal bin and the boiler and manufacturing floors. This foundation is continuous from the front to the back wall, and divides the basement into two parts, except that it is pierced both lengthwise and transversely with large tunnels permitting free communication, and serving as conduits through which the necessary piping may be carried. The flooring over these side basements is constructed entirely free from the framework of the building, and consists of 24-in. 100-lb. I-beams, spaced about 3 ft. 3-in. centers, filled in with concrete and covered with 24 inches of the same, making a floor 4 ft. in thickness. On the side under the elevator pumps this depth is increased to 5 ft., by the addition of another foot of concrete. This was done to avoid any possible vibration due to the operation of these pumps. The second and third floors extend only along the sides of the building of sufficient width to carry the boilers, except that they connect by galleries at each end. The center space is thus left open to the bottom of the coal bin, which occupies the center of the fourth and fifth floors.

Arrangement of Machinery.

On the first floor, in the center, are the two large engines direct connected to alternating generators, with provision for installing a third unit at a future time. To the left of these are two elevator pressure pumps, also with a place for a third when required. On the right are located two small engines direct connected to direct current generators which serve to excite the large alternators. In this room is also located the switchboard, with ample space both in front and behind, giving free access to every part; the rear side is in strong daylight for its entire length.

At the rear of this room appears the steam end of the vertical pumps which draw the general water supply from the river, the base of these pumps being at a level of 6 ft. 6 in. below the basement floor; and beneath this level again is a small sump into which all leakage in the basement collects and is pumped into the river. The remainder of the basement is taken up by the boiler feed pumps, of which there are two in place with room for a third; feed water heater with space for a second one, softening apparatus for feed water, exhaust muffler and grease separator, return water tank and small receivers and pumps for various drains. In the basement on the other side of the building are located the accumulators, a large air tank for cushion on the return line to the elevator pumps, and a pump at the artesian well which supplies the drinking water. In a small intermediate basement in front of the engine foundations are located the filters for the boiler feed purifying system. On the second floor of the building are located the boilers, and the third floor is arranged so as to be finally used for the same purpose; thus doubling the present capacity. Above the level of the third floor boilers is the coal bin.

Details of Machinery.

The engines are of the vertical type Westinghouse-Corliss cross compound with reheating receiver; the cylinders are 28 x 46 x 48 in. Both the guides and the main bearings are water cooled. The flywheels are 19 ft. diameter and weigh about 200,000 lb. each. They are gray iron wheels, made in four segments of 40,000 lb. each, the hub also weighing 40,000 lb.

These engines are direct connected to 1,000-k. w. alternating current three-phase, rotary field, Westinghouse generators; they are 80-pole machines, running at 90 revolutions, giving 7,200 alternations.

Over the engines and generators is a 25-ton electric traveling crane, built by Pawling & Harnishfeger, and there is a sunken way in the engine room floor which permits the entry of wagons at the street level to a point commanded by the crane, thus facilitating the delivery or removal of machinery, etc. When not in use this space is covered by a movable floor.

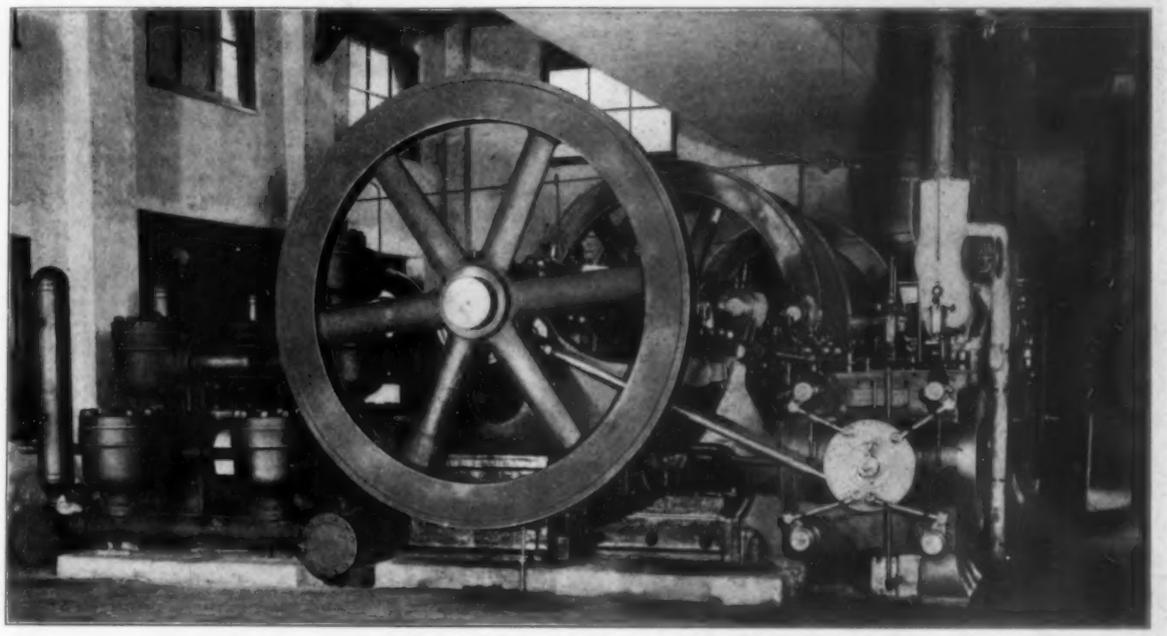

FIG. 2.—LAIDLAW-DUNN-GORDON HIGH DUTY PRESSURE PUMP.

There are two Laidlaw-Dunn-Gordon special elevator pumping engines of the three-cylinder compound horizontal pattern, 21½in. high pressure cylinders, and two 28-in. low pressure cylinders, with reheating receivers; the plungers being 6¼-in. diameter, and the stroke 24 in. The machines deliver water against a pressure of 850 lb., the capacity being 700 gallons per minute.

Water is supplied by two vertical tandem-compound duplex Wilson-Snyder pumps with cylinders 18 in. and 30 in., 17¼-in. plungers by 30-in. stroke, which draw water from the Allegheny river and deliver it against a pressure of 150 lb., to be used for all purposes except drinking, including fire service.

Two 12-in. by 12-in. Harrisburg engines are direct connected to 60-k. w. Westinghouse direct current generators. These are used for exciting the fields of the large alternators, and for other purposes for which direct current may be required. If at any time the demand for direct current should exceed the capacity of these machines other units can be installed, or rotary transformers may be used.

The boiler feed is furnished by two Wilson-Snyder compound duplex pumps with cylinders 8 in. and 14 in. on the steam end, and 7-in. water cylinders by 18-in. stroke.

The elevators, both freight and passenger, were built by the Otis Elevator Co. and are of their most approved pattern of high pressure machines, operating with 850-lb. hydraulic pressure. They are supplied with all up-to-date devices for operating and for safety. The accumulators were also supplied by the Otis company. They have plungers 12-in. diameter by 12-ft. stroke, and are weighted with cast iron rings, one being weighted slightly in excess of its mate, which is connected to a chronometer valve on the pressure pump by means of wire rope, in such a manner that the motion of the accumulator plunger starts and stops the pumps. The second accumulator being more lightly loaded, will be the first to rise and the last to fall. They are arranged, however, so that if from any cause one of them be put out of commission, the other may be quickly connected to either of the pumps. These machines have automatic stop valves which throttle the water, and so bring the moving mass of iron quietly to rest at each end of its travel.

The switchboard is 7 ft. 6 in. high and 30 ft. 4 in. long. It has one panel for direct current, three for the alternating generators and six distributing panels. It is of blue Vermont marble mounted upon an iron frame, and is equipped with improved forms of all instruments necessary for the control of large currents. The lead-covered cables from the generators to the switchboard are taken in conduits under the floor. These conduits are so covered that they are not visible, and cause no interruption to the continuity of the floor; but they can be opened without serious difficulty should occasion arise. The cables go from the board down through the floor to the basement, and thence through the tunnel to the Bessemer building.

The Scaife system of treating tanks and filters is used for purifying the water before it enters the boilers. This apparatus consists of two solution tanks provided with small pumps for forcing the solutions into the precipitating tanks, of which there are also two. These latter are closed tanks, being required to withstand an internal pressure of 200 lb. Through these tanks the water travels very slowly, the bulk of the impurities settling to the bottom during its passage. From here the water goes to the filters, of which there are four, also of the closed tank pattern; the pressure, of course, being the same as in other parts of the feed water system.

In addition to the more important apparatus above mentioned, there are a number of small pumps used in the daily operation of the plant. There is a pump for discharging the water from the basement sump; another for taking the water from an open tank in which the returns from various lines are collected; a receiver and pump which takes all drips from steam separators and high-pressure lines; and a small receiver and pump which takes the greasy drips from the feed water heater and the grease separator.

The feed water heater is of the closed rectangular pattern made by the Pittsburg Heater Co. There is also an air compressor for supplying air to the cushions on the hydraulic system; and the oil filters and pumps for the lubricating system.

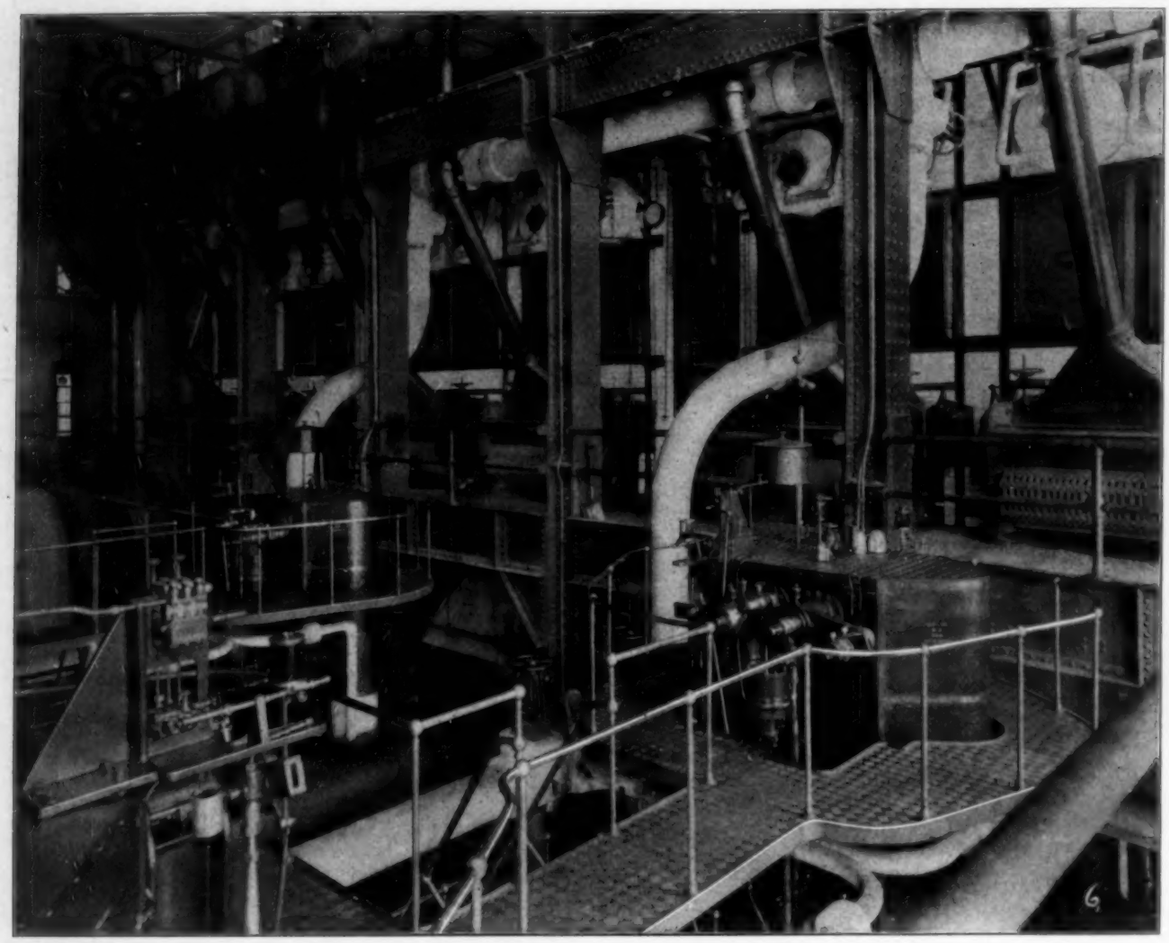

FIG. 3.—LOWER TIER OF BOILERS AND STOKERS ON SECOND FLOOR.

Coal is delivered at two large receiving doors on Cecil alley, and falls through heavy cast iron gratings into hoppers beneath. From there it is raised by two elevators, designed by Heyl & Patterson, to belt conveyors which traverse the entire length of the coal bin. Moving trippers travel the full length of the conveyors and distribute the coal evenly along on both sides. The coal bin is of heavy steel plate stiffened with I-beams; it is lined with cement plaster upon wire netting, the bottom being built into hopper forms from each pipe opening by hollow tile such as is used for fireproofing. Twelve pipes, each 12 in. in diameter, lead directly to the stokers at the boilers, and other openings are in the plates ready for the second floor of boilers.

The present installation consists of twelve boilers of the Babcock & Wilcox water tube type, aggregating 3,600 h. p. rated capacity. Each boiler consists of 140 44-in. by 18 ft. water tubes, and two 36-in. by 18-ft. drums. They are built two in each battery, and furnished with Babcock & Wilcox chain grate stokers, this construction giving free access to one side of each stoker. The furnace gases discharge directly in the rear of the boilers; those from each boiler into a separate vertical flue provided with a damper which swings open of its own weight, and is held in the desired position to check the flow of gases by a chain. The vertical flues are 15 in. by 10 ft. and rise directly to a 4 x 10-ft. horizontal flue. They have expansion joints about the center of their length. The horizontal flues each have two expansion joints, and are suspended from the girders above in such a manner as to admit of the requisite motion in the direction of their length. They are provided with numerous cleaning doors.

There are separate stacks for the boilers on each side of the building. The stack proper rests upon heavy girders, but between it and the horizontal flue is a short section or sub-base which connects to the stack through an expansion joint. This sub-base rests directly over an opening in the upper side of the horizontal flue, and is also joined to it by a large connecting flue at an angle of about 45 degrees to provide a free

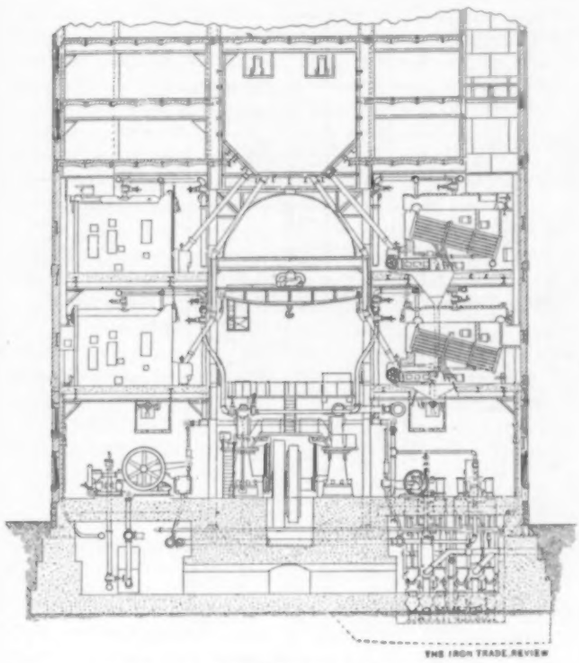

FIG. 4.—CROSS SECTION OF POWER BUILDING.

sweep for the gases as they change from a horizontal to a vertical direction. The stack is 11 ft. inside diameter, and rises to a height of 200 ft. above the grate bars. It is built of ⅜-in. steel plates, except the bottom ring and the rings where it is stayed to the building at the roof, which are ½ in. There are four substantial brackets at the base which rest upon the steel work of the building, and the top is stiffened by a ring made of two 6 x 6 x ⅞-in. angles, and below this a ring made of Z bar for carrying slings for painting. A ladder extends from the roof to the top of the stack. The stacks are not lined. Around the 11-ft. stacks are tile wall inclosures 13 ft. square, permitting the intervening spaces to serve as ventilating shafts for the engine and boiler floors.

The Piping System.

The piping system is never the least important part of a power plant, and in this instance it really constitutes itself a leading feature.

Water Supply and Boiler Feed.—On the bank of the Allegheny river is a massive concrete block which forms the intake for the water supply, and from this point two 16-in. cast iron bell and spigot pipes lead to the supply pumps in the power building. This intake has been built to conform to the harbor line of the river, and for this reason it is scarcely visible to casual observers. The inner end appears, when the water is at pool stage, but it is flush with the surface of the wharf and covered with a heavy cast iron plating. The screen, the tops of which are below the water even at pool stage, are formed of angle bar frames with bronze wire netting, and

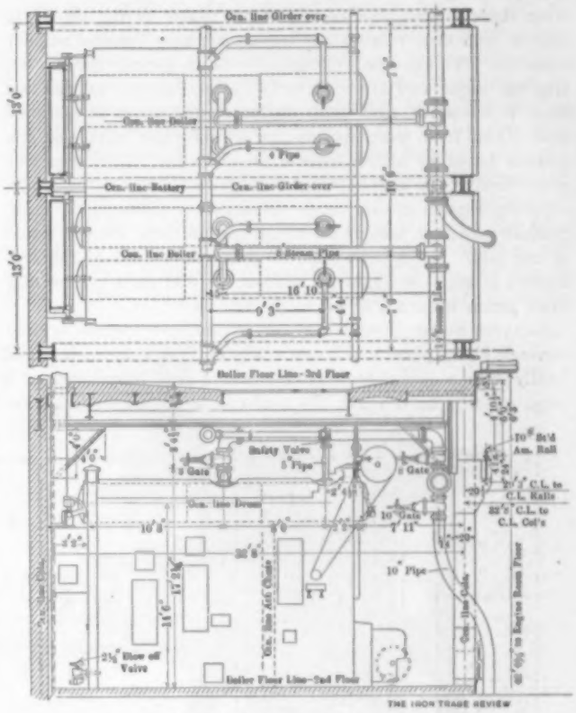

FIG. 5.—PLAN AND ELEVATION OF BOILERS.

are dropped into slots formed in the concrete. In front of the screens is a grating made of round wrought iron bars 2½ in. in diameter; these are dropped into sockets in massive cast iron beams and may be removed singly.

Discharging into the river at a point below the intake is the private sewer from the power building, made of 10-in. bell and spigot pipe.

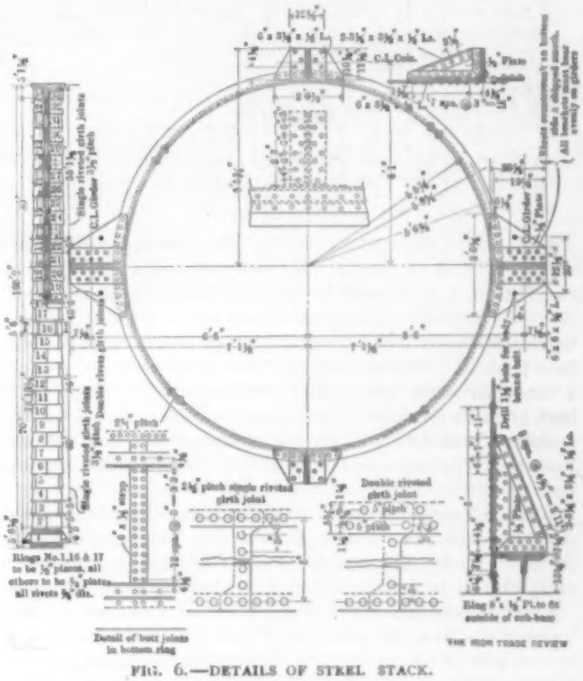
Single riveted girth joints
Double riveted girth joints
Single riveted girth joints
Double riveted girth joint
Rings No. 1, 16 & 17 to be ½" plates, all others to be ⅜" plates, all rivets ¾" dia.
Detail of butt joints in bottom ring
Ring 6" x ½" Pl. to fit outside of sub-base
THE IRON TRADE REVIEW

FIG. 6.—DETAILS OF STEEL STACK.

At the supply pumps the system of valves is such that each of the pumps may draw from either, or both, of the intake pipes, and also that the pumps may discharge into either of the intake pipes while drawing water through the other one,

for the purpose of blowing out any sediment which may collect in them. From the discharge side of the pumps a 16-in. main leads to the various properties, a 6-in. branch being taken off to supply the general needs of the power building, while a 10-ton line leads to the boiler feed pumps. From the feed pumps an 8-in. line goes to the feed water heater, and from there a 6-in. line takes the hot water to the purifying system, and then reaches the boilers through various smaller branches. Valves are arranged so as to bypass the heater, treating tanks and any one or all of the filters, so that the plant is operative with these devices entirely out of commission. The feed water mains are of wrought iron, and the smaller branches at the boilers are of brass. Near the feed water heater is a nickel-seated water relief valve set at 220 lb.

Steam Pipes.—Steam from the boiler is collected in 14-in. headers on either side of the building, and these are connected at one end. From both headers 10-in. lines lead to the separators at each of the large engines, so that each engine may draw steam from any or all of the boilers.

Exhaust Steam Pipes.—Exhaust steam leaves these engines through 18-in. pipes which are collected into a 24-in. line and finally into a 30-in. main and stack, which terminates in a large exhaust head above the roof of the building. Since exhaust steam is to be used for heating during a greater part of the year there is a 30-in. back pressure valve located in the horizontal main; and behind this valve are collected branch lines from all the steam-using machinery, but arranged in such a way that while the smaller machinery is working under back pressure the main engines may exhaust freely to the atmosphere, and by operating the proper valves the exhaust from these engines may also be forced into the steam heating mains.

Waste Steam.—The steam wasted through the safety valves is collected into two 8-in. mains which in turn discharge into the 30-in. stack. The branches enter these mains at an angle of 45 degrees to permit an easy flow of steam.

Boiler Blow-Offs.—From the boilers on each side of the building the blow-offs collect into short 4-in. mains, and these in turn join and form two 5-in. lines which discharge into the private sewer. A branch from the filter blow-offs also leads into one of these 5-in. lines.

Hydraulic Lines.—The elevator pressure pumps discharge into 8-in. pipes, and these lead into a 10-in. main from which branches are taken to the pressure side of the machines. A 6-in. branch is also taken into the accumulators, and on this branch is located a large air chamber fitted with a valve to prevent the air from escaping should the pressure in the line fall from any cause. The return water from the elevator cylinders come back to the power building through a 14-in. bell and spigot pipe and goes directly to the suction side of the pumps, the portion of the line within the building being of galvanized steel pipe. There is a large air tank on this line to cushion the shock of the moving body of water. A 6-in. branch from this line goes directly to a wooden tank above the roof of the power building. This tank acts as a reservoir, altitude is sufficient to maintain a pressure of about 75 lb. against which the machines must discharge. The object of this arrangement is to guard against the possibility of the cylinders emptying themselves, as they are placed vertically and contain a column of water of much greater height than the atmosphere would support. The large operating valves of the elevators are moved by cylinders operated by small pilot valves, and these small valves take water from the 75-lb. line and discharge it at atmospheric pressure. This water returns to the open tank and is saved, as it is of value, having been previously treated and filtered.

Return Water Lines.—A small amount of live steam is used in the office buildings for heating water, and the condensation from this is returned to the open tank, as is also that of the exhaust steam from the heating system and the discharge from the elevator pilot valves. The water from this tank is pumped through a 4-in. pipe to the tank above the roof, replacing the loss in the hydraulic system. When the roof tank is full, a float operated stop valve closes, and the pressure rises sufficiently to force a check valve in a branch line leading to the feed water system, entering it behind the heating and purifying apparatus. The clean drips from steam separators, etc., are pumped directly into the feed pump discharge, and the oily drips from the grease separator and condensation in the feed water heater are pumped into the elevator pump suction line.

Piping Details.—With the exception of the high pressure hydraulic lines all valves and pipe fittings of a given size in this building are interchangeable, from the smallest size up to 14 in., this being the largest size used for any purpose other than exhaust steam and a few fittings directly connected to the main supply pumps. At these pumps there are some 16-in. valves and a number of special 16-in. fittings.

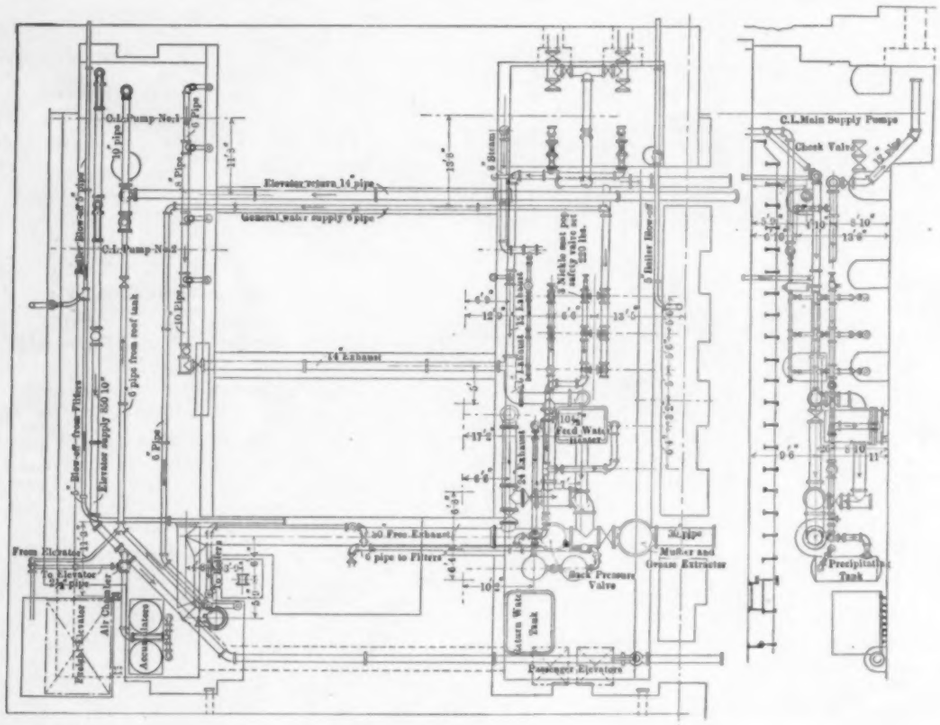

FIG. 7.—GENERAL ARRANGEMENT OF PIPING IN BASEMENT.

For exhaust steam there are valves and fittings 18 in., 20 in., 24 in. and 30 in. The result is that any valve or fitting can be used in any part of the plant provided it is the proper size. Aside from the hydraulic lines, all valves and fittings are plain faced, the flanges above 6 in. being rolled steel, the fittings cast iron. All flanges and fittings have machined surfaces for bolt-heads and nuts, and the under sides of bolt-heads and nuts are faced. The bolts are made from refined wrought iron. All bolt holes are drilled, the number of holes being four in the small sizes and some multiple of four for the larger ones. The cast iron flanges are threaded in the usual way, and the rolled steel ones have grooves into which the pipe is pened. The pipe hangers are entirely of forged steel, and are of a very substantial character; they are provided with turn buckles for adjusting the length. The flanges and fittings on the hydraulic lines are of a type especially designed for this plant. The flanges are screwed to the pipe and are then turned in the lathe in such a manner as to leave the pipe and a portion of the flange immediately surrounding it projecting a considerable distance from the face. This projecting portion is slightly curved on its face, the highest part occurring on the pipe itself, and between these pipe ends the heavy copper gasket is compressed. It will be seen that there are no male and female joints in this system; all flanges of a given size are alike, a corresponding projection being formed upon the fitting. All the fittings are steel castings, the flanges being of forged steel. The elbows are of long sweep pattern and the tees are strengthened with heavy ribs. In order that the gasket may center itself readily, its outside diameter is made equal to the inside diameter of the bolt circle. A few of the bolts are put in place and the gasket slipped in between the flanges; the remainder of the bolts are then inserted and the joint tightened.

The power building requires to be supplied with coal, and this done, it is able to return power in various forms, such as electric current, alternating and direct; steam at 150 lb., or any lower pressure; water at 150 lb., or at 850, and compressed air. At present these lines are taken through an underground conduit to the Bessemer building. In the future, the ground through which this conduit runs will be covered with tall buildings, and the pipes will then appear in the basement of one or more of them, being already provided with branches from which lines may be taken to supply the buildings through which they pass.

The engineering and architectural designing and the superintendence of construction throughout were in charge of Julian Kennedy, engineer, Pittsburg.

The Fore River Shipbuilding Co., Quincy, Mass., has been incorporated for the purpose of taking over the property and business of the Fore River Ship & Engine Co., whose property was sold at foreclosure Sept. 7. The capital of the new concern is to be $4,800,000, divided into 24,000 shares each of common and 6 percent non-cumulative preferred stock. At the foreclosure sale the property was bid in by Henry Endicott Jr., of Boston, representing the reorganization committee, for $1,000,000. It was announced that the outstanding indebtedness of the company was $1,606,000. Three battleships for the United States Government are now under construction at the yards.

W. H. Becker has closed a contract with the American Shipbuilding Co. for a steamer of 6,000 tons' capacity to come out at the opening of navigation next spring. The vessel will be 400 ft. over all, 380 ft. keel, 50 ft. beam, and 28 ft. deep. It will be of modern construction and will have twenty hatches, and there will be no beams or stanchions in the hold. The contract price is $205,000. The American Shipbuilding Co. has awarded the contract for the shapes and plates required, about 2,500 tons, to the Jones & Laughlin Steel Co., through the Otis-Bonnell Co., Cleveland.

President Spittler and Manager Corbin, of the Vulcan Mfg. Co., Waterbury, Conn., have been appointed receivers of that company. The receivers have been ordered to continue the business for two months.

AN OLD-TIME CRANK SHAPER.

The half-tone shows a machine which is said by the owner to be "still doing good work." This souvenir of the early stages in the development of a most interesting tool was built by the firm of E. Gould & Co., of Newark, N. J. It will be remembered that the old firm became Gould & Eberhard in due course and *The Iron Trade Review* has occasionally illustrated the latest improvements the company has produced in shapers and other machine tools. The tool here illustrated is worthy of some comparison and it is noteworthy that this crank shaper has at least one feature in common with the later tools. The cross slide on the machines now turned out by Gould & Eberhardt is held to the frame of the shaper in exactly the same manner as on those made by the firm some thirty years ago. It will be seen that dependence is not placed in the accuracy of a bolted gib. Of course the details of the machine, the general design, conveniences for the workman and the operation throughout have been changed materially in the latter day machine, as is evident.

A PIONEER SHAPER.

At a special meeting of the board of directors of the Dillon-Griswold Wire Co., Sterling, Ill., Sept. 6, C. M. Wicker resigned as president and director of the company and H. C. Wicker as general manager and director. Chester Griswold was elected president in the place of C. M. Wicker and John B. Howatt was chosen for general manager. Mr. Howatt and Robert McCosh, secretary of the company, were elected directors in the place of the Messrs. Wicker. Mr. Howatt was formerly of Sharon, Pa., where he was general superintendent of the Sharon Tin Plate Co., and more recently he has been with the Sharon Steel Hoop Co. Mr. Griswold was formerly treasurer of the Dillon-Griswold Wire Co., which office he retains as well as that of president. He was formerly treasurer of J. G. White & Co., Inc., of New York, which company is engaged in engineering and construction work, particularly in the United States and the Philippine Islands.

The Chattanooga Furnace Co., Chattanooga, Tenn., which recently went into bankruptcy, will be reorganized and in the place of the old furnace now located on the western base of Cameron Hill a new stack will be erected. The new furnace will have a capacity of 125 tons per day. J. L. Dowling, a well known furnace builder who has just completed the furnace at Battelle, Ala., has completed plans for the new furnace. It is expected that the erection will be begun at an early date.

AMERICAN LOCOMOTIVE CO.'S REPORT.

The annual report of the American Locomotive Co., of New York, shows gross earnings of $33,068,750.56, a decrease of $36,974.28, as compared with the preceding year. The expenses were $27,404,985.40, a decrease of $647,329.50. The report says that the expenses included the direct manufacturing cost —both labor and material—and all material charges against production, "such as maintenance and renewal of buildings, machinery and tools, shop expenses and supplies, and general office disbursements, taxes, insurance, etc." There is also included a depreciation charge of 20 percent of the book value of patterns, drawings, templets, iron flasks, formers and ties. There is a further charge of $1,101,299 for additions to property. After paying the interest on the bonds of the constituent companies, $75,125, the interest on the miscellaneous outstanding obligations, $163,101.07, and the dividend of 7 percent upon the preferred stock, $1,750,000, there remained a surplus of $3,675,539.09.

The directors have created, out of the surplus, an extraordinary betterment and improvement fund" of $1,000,000, for the purpose of completing certain betterments now under way for the more economical operation of the plant. The report lays stress upon the policy of the management to build for the future, and says that this policy has been consistently carried out during the past year. Additional land, new machinery and tools to the value of $1,101,299 have been bought and paid for during the year out of the earnings of the period. The work of rearranging the old shops has also been actively carried on during the year, and betterments have been made that will make it possible in the near future fully to maintain and renew the property at a smaller average annual expenditure. Notable progress has been made in the accumulation of a larger working capital. After deducting $980,037.59 in partial payment of the securities of the Locomotive & Machine Co., of Montreal, the convertible cash assets amount to $12,215,720.10 and the current liabilities to $2,892,349.65, leaving a net working capital of $9,323,370.45, as compared with $6,751,713.71 excess of assets on June 30, 1903, and of $4,998,915.93 on June 30, 1902. It will thus be seen, says the report, that there has been satisfactory development along safe and conservative lines.

In order to protect the company's business relations in Canada, the report says, control of the Locomotive & Machine Co., of Montreal, Ltd., was acquired on March 31 last. The American Locomotive Co. owns the entire capital stock and $1,000,000 out of a total issue of $1,500,000 of the first mortgage 4 percent bonds of that company. The purchase has met with favor in Canada, "where the rapid development of that great territory promises an adequate return upon the investment."

In the way of broadening the scope of the operations, the company during the year undertook the manufacture under agreement with the owners of patents of the Atlantic steam shovel, a machine of greater capacity than any other similar one. The sale of this product, and of other specialties, including rotary snow plows, high-power dredging machinery, small engines for mining, plantation and contractors' use, is conducted by the Atlantic Equipment Co., the entire stock of which is owned by the American Locomotive Co.

Mechanical and electrical engineers of the company have been busy during the year studying the problem of the future application of electric power to steam surface roads and also a specific proposition for an electric locomotive suitable for the suburban traffic of the great trunk lines. In co-operation with the General Electric Co., agreements have been entered into for the manufacture of 30 electric locomotives to be delivered by 1906. The American Locomotive Co. will construct the mechanical parts of the locomotives, the General Electric Co. supplying the electrical apparatus.

"While much gratified that the financial results of the year have equaled those of the twelve months preceding," the document concludes, "when general business conditions were undoubtedly more prosperous, it is proper to say frankly to our stockholders that the company could not hope to maintain unchecked such an exceptional volume of business as that which it has received during the past three years. In common with nearly all business interests the company will doubtless suffer an important contraction in the extent of its operations during the fiscal year upon which it is now entering. All signs point to such a prospective decrease, yet the outlook is by no means of a discouraging character. It is, however, for just such seasons of contraction as that which seems now to be before the company that its officers have earnestly been striving to prepare, and their confidence in the company's future remains unabated."

The following summary of operations for the fiscal year is given:

	1903-04.	Increase.
Gross earnings	$33,068,750.56	*$36,974.28
Mfg., maintenance and administrative expenses	27,404,985.40	*647,329.50
Net earnings	$ 5,663,765.16	$610,355.22
Int. on bonds of constit. companies, bills payable, etc.	238,226.07	*9,930.72
Profits avail. for dividend	$ 5,425,539.09	$620,285.94
Div. on pfd. stock, at 7 percent	1,750,000.00	.....
Surplus	$ 3,675,539.09	$620,285.94
Extraor. imp. and better. fund	1,000,000.00	1,000,000.00
Bal. on profit and loss	$2,675,539.09	*$379,714.06

*Decrease.

Sound Pump Castings.

It is a well known fact that water under pressure will force its way through any soft or porous places in a casting, and hence pump cylinder castings, especially those intended for high pressures, should be made of close grained iron. The designer of the pump is in a far greater measure responsible for irregularities in the casting than the patternmaker, for it is a very important matter that the metal thicknesses in different parts of the cylinder should be as uniform as possible.

Where pumps are to be exposed to acid waters, as in many mines, a chemical action takes place in these porous places and the interior is rapidly eaten away. In one style of pump I have in mind two plungers work in opposite ends of the barrel and there is a dead head or partition cast in the center. A flat base was arranged under this central partition and the mass of iron in this base is considerably thicker than that in the walls of the cylinder or in the partition. As a consequence there was a porous place in this mass. The acid mine waters penetrated the porous iron and gradually dissolved the metal until there was an opening connecting with the two ends of the pump.

If any one will notice the interior of a blow hole he will see that the metal is not covered with a scale, and hence is in the very best possible condition to be dissolved by acids. On this account, every precaution should be taken to prevent acid water from finding its way into such cavities.

In another pump of a different make, the division between the two ends of the cylinder was made about twice as thick as the cylinder walls and was not ribbed. These heads would only last a few weeks when the cylinder would have to be renewed. Upon examining them it was found that the porous iron had been penetrated by the acid waters and hence the head had been rapidly dissolved. The designer up to this point had been blaming the foundryman for bad iron, but when the foundryman called his attention to this fact he tried his hand at solving the difficulty. He made the partition slightly thinner than the cylinder walls and added ribs to give it the desired stiffness and strength. The result was that he was sure of getting a sound head and, to the surprise of everybody, these thinner heads lasted many times as long as thick ones.—[John McCune in The Foundry.

The McCormick, Deering and Plano plants of the International Harvester Co. have been closed for an indefinite period, throwing 9,000 men out of employment. Officials of the company state that the only significance in the move is that the dull season in the harvesting implement business has arrived. Extensive improvements are to be made while the plants are not in operation.

A RECORD IN BUILDING CONSTRUCTION.

An addition has been made to the well known factory at Kilbowie, near Glasgow, of the Singer Mfg. Co., which probably constitutes a record, not only in respect of size, but also in the time taken to complete the structure. At these works the company has been producing sewing machines at the rate of 800,000 per annum, but found that while other departments could produce more, its cabinet factory prescribed this limit. It therefore decided at the beginning of the year to make an addition in order to increase production to 1,000,000 sewing machines per annum. The contract for the new building was let to Messrs. Robert McAlpine & Sons, a well known Glasgow firm, who had erected the original factory twenty-one years ago. One of the conditions of contract was that the work should be completed within six months, a heavy penalty being specified for each day taken beyond this limit. The firm has succeeded in constructing the immense building within the time limit, notwithstanding that it was found necessary to carry the foundations for some part of the area to a depth of 22 feet, owing to the bed of an ancient stream being discovered. The test-load on the foundation was 9 tons per square foot, three times the normal load of the building. The structure measures 800 feet long, 80 feet wide, and the six floors, with flat roof, make a height of 90 feet from surface level. A more suggestive indication of the extent of the structure is afforded by the statement that the building is equivalent to an erection 40 feet deep and 30 feet high, stretching along a thoroughfare for almost exactly one mile. The four walls are built of brick work, 36 inches thick at the base, narrowing to 18 inches at the top, having at intervals of 15 feet 4 inches buttresses 3 feet wide, and projecting 18 inches from the face. The intermediate supports for the floors consist of three steel columns in the width of 80 feet, set at 15 feet 4 inches centers in the longitudinal line. These columns are built of channel section, there being four 12 x 3 x ½-inch channels, with six cover plates for the two lower floors, two channels for the third and fourth floors, and H-beams for the fifth and sixth levels. The main girders, which are transverse, are formed of two joists riveted together, while the longitudinal beams rest on these at 3-feet, 3-inch centers. The calculated load per square foot of floor is 300 pounds. The steel was of 27 to 32 tons ultimate tensile strength, with a minimum elongation of 20 percent in 8 inches.

While concrete was used as a bottom for the brick foundations, a new material known as "ferrolithic" was adopted for casing the steel work and for forming the floors. This ferrolithic, which is largely adopted by Messrs. McAlpine, is formed of the slag of steel furnaces, broken to cubes of 1½ inch, the proportions being four of slag to one of slag-sand and one of cement; and it is claimed that it exceeds in tensile strength by 50 percent concrete made with four parts of crushed granite. At no place is there less than 1½ inches in thickness of ferrolithic around the steel work, while between the longitudinal joists the thickness is 4 inches. Diagonal wooden joists 2 inches deep are laid over this flooring at 18-inch centers, the intervening spaces being filled flush with ferrolithic, and over this are two thicknesses of flooring, the bottom layer being tongued and grooved, and the upper boarding plain jointed, but transverse to the bottom timbers. The minimum thickness of floor is thus 8¼ inches. The roof is of ferrolithic, covered with a layer of Seyssel rock-asphalt, and with a slope to pass off rain water. In addition to the structural provision against fire, there is a complete system of sprinklers, and the building is divided by fire-resisting walls of ferrolithic into four compartments, the doors of communication being of tin-lined timber, running on inclined rails, and held open by balance weights, the chain of which is released automatically by the fusing of a solder link when the temperature becomes abnormal.

Adjacent to the transverse division walls there is, at each floor, an exit to an outside iron gangway communicating with the adjoining compartment. At each end of the building there is also an outside flight of stairs with exits from the roof and each floor, while on the top floor there is an iron gangway on to the roof. Workmen imprisoned by fire have therefore clear exits in addition to the ordinary flights of stairs which are accommodated, along with a large hoist, in four towers communication with each floor in each compartment. On the top of two of these are tanks of 10,000 gallons capacity for the sprinkler water. The building is thus not only of exceptionally large dimensions, but admirably equipped against fire, and the splendid performance in the construction of it within six months is established by the further fact that the excavations for foundation involved the movement of 17,000 tons of earthwork, the laying *in situ* of 7,000 tons of concrete, the building of 23,000 tons of brickwork, the erection of 4,000 tons of structural steel and iron, the formation of 14,000 tons of ferrolithic. The floor area is 8½ acres, and the side windows, which have rolled steel framing, are 1⅛ acres in extent. —[Engineering.

Personal.

Wm. Cullen, son of President J. K. Cullen, of the Niles Tool Works, Hamilton, O., has purchased an interest in the Columbia Foundry Co., New Richmond, O., which city he will hereafter make his home.

George W. Heth has been appointed superintendent and general manager of the Warren Independent Steel Co., Warren, Ill., having resigned his position as general sales agent of the Frost Mfg. Co., Galesburg, Ill.

Fred W. Bauer, one of Rogers, Brown & Co.'s representatives in Ohio, sails for Europe in the latter part of September and will be absent about six weeks.

Obituary.

Abraham Lincoln Stanley, aged 39 years, a partner in the Stanley Wire Nail & Tack Co., Belleville, Ill., died suddenly Sept. 3 at his home in Bellevile.

J. B. Ramp, for nearly 25 years foreman and superintendent of the foundry of the Murray Iron Works at Burlington, Iowa, is dead at the age of 74. Mr. Ramp was born in New York city and was a soldier in the Civil War. He was held in the highest esteem by his employes and employers.

Activity at Steel Corporation Plants.

(Special Telegram.)

PITTSBURG, Sept. 14.—For the first time in eighteen months all plants of the United States Steel Corporation in the lower Monongahela valley are in operation. This includes the plants of the Carnegie Steel Co., American Steel & Wire Co. and the National Tube Co. The H. C. Frick Coke Co. has 85 percent of its ovens in operation.

Tin Plate Order from Japan.

(Special Telegram.)

PITTSBURG, Sept. 14.—The American Sheet & Tin Plate Co. has received an order for the shipment of 25,000 boxes of tin plate to Japan. The material is going from the company's warehouses at Newcastle, Pa.

The George A. Hogg Iron & Steel Co., Pittsburg, manufacturer of engines and rolling mill machinery, reports quite an improvement in business lately. Among the orders received recently was one for a complete 18-in. mill for the Union Rail Co., of Huntington, W. Va. (for re-rolling old rails); a complete 20-in. muck mill for the Wilkes Rolling Mill Co., of Sharon, Pa.; a complete 12-in. guide mill for the Iron Co. of America, Roanoke, Va.; two large roll lathes for John Roebling's Sons Co., of Trenton, N. J.; part of a 9-in. mill for Westerman & Co., Lockport, N. Y.; fifteen or twenty rock crushers for the Abbe Engineering Co., of New York city; as well as a number of smaller jobs.

The C. O. Bartlett & Snow Co., Cleveland, has recently received the following orders: Levi Cohn & Bros., Lancaster, Pa., one 72-in. Triumph steam dryer; Ohio Retarder Co., Port Clinton, O., one 72-in. Triumph steam dryer; the Sheets Bros. Elevator Co., Cleveland, complete elevator machinery outfit for the plant recently destroyed by fire; the Good Roads Machinery Co., Uniontown, Pa., one elevator outfit.

THE IRON TRADE REVIEW

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CROPS AND THE BUSINESS OUTLOOK.

It is evident even to a casual observer that the business situation as a whole is steadily improving, but there are still features which suggest the continuance of a conservative course. Increased clearing house exchanges and larger gross receipts of the railroads, even before there has been an important increase in the crop movement, are among the most favorable signs indicating a revival in trade. The labor outlook, too, seems to be assuming a phase favorable to a renewal of industrial activity throughout the fall and winter. The revision of prices of steel products and the activity in electrical enterprises, reflected in the absorption of current production of copper, are also assumed to be favorable to a larger volume of business in manufacturing industries.

On the other hand, an element of danger seems to lie in a too rapid return of confidence among speculators, especially stock operators. With an easy money market and call loans at 1 percent, speculative ventures are naturally nourished, but with the first signs of substantial improvement in business it is somewhat unfortunate that there should be a tendency to resume interrupted financial schemes which in large measure were responsible for the depression that was so marked last fall and winter.

There is no doubt not only of an ample but of a liberal surplus supply of funds seeking investment at the moment; at the same time, with a call for currency for crop moving purposes imminent and a decrease of $15,000,000 in cash reserves of the banks, attending an expansion of $30,000,000 in loans during the last fortnight, speculators may over-strain present conditions and retard, if not prevent, a revival of legitimate business.

The condition of Government finances is also a distinctly conservative factor, although it appears that the administration is not likely to be compelled again to call upon the depository banks for funds until after the first of the year.

The September report of the Department of Agriculture, concerning both the major and minor crops, makes it evident that business interests will have a substantial foundation in agricultural prosperity. At the same time, the report on wheat indicates that the agitation in mercantile circles several weeks since was based upon real deterioration in the grain. It should be noted that it is officially announced that the present statement of condition of wheat is equivalent to an estimate of the actual crop as compared with a normal yield. This fact makes the present showing of unusual interest. The average of condition of spring wheat on September 1 was 66.2 percent. This is the first time that spring grain has been reported upon at this time in the year separately from winter wheat. It will be noticed that there was a decline of 21.3 points during the month of August and upon a larger acreage the indication is for a crop of about 206,000,000 bushels, against upward of 238,000,000 bushels a year ago. Winter wheat also will be less than last year, it being estimated that the crop harvested will be 335,000,000 bushels, compared with almost 400,000,000 bushels last year. But it is to be noted that the acreage sown to winter wheat was over 5,000,000 acres less this year than last. These figures indicate a total wheat crop this year of 540,000,000 bushels in round numbers, or a loss of 70,000,000 bushels during the last month and 100,000,000 bushels less than was harvested in 1903. Thus we are about to round up the smallest crop of wheat, with the exception of 1900, of any year since 1897. On the other hand, all other grain crops show a substantial increase. The total production of corn will be about 2,500,000,000 bushels—one of the largest crops ever harvested. It will take over two weeks, however, to place corn beyond reach of frost in a large part of the corn belt. The yield of oats is likely to be 80,000,000 bushels greater than last year, while the barley crop will contribute over 6,000,000 bushels more than in 1903. The rye yield, however, will be about 1,000,000 bushels less than last year.

With the beginning of September we enter upon a new cotton year and according to reliable commercial estimates the 1903-4 crop was in round numbers 9,840,000 bales, which is about 600,000 bales less than was gathered last year and 500,000 bales less than in 1902. It is interesting to note that the United States raises two-thirds of all the cotton produced in the world, but consumes scarcely one-third of the world's crop. In the light of the effort now being made in England and other European countries to become independent of the United States in regard to cotton it is suggested more forcibly than ever that the United States, because she possesses the raw material in greater volume and at lower cost than any other country, should lead the world both in manufacturing and in exports of manufactured goods, not only of cotton but of iron as well.

THE PRICE OF STEEL RAILS.

Undue significance should not be attached to the fact that, with the recent reductions in the official prices of plates and structural shapes, standard rails constitute the only important steel product which remains at the same figure as prevailed in 1901 or 1902. The exact nature of the guarantee on rails for this season may be open to some question, but there is no dispute that there is some guarantee, and that in the event of a reduction, even should the railroads not be able to collect a rebate on the total rail tonnage for the year, or

on the unshipped portion, they would at the least elect to defer until next year the delivery of a larger tonnage on 1904 contracts than they otherwise would call for. Such holding over is more or less a matter of negotiation. Every week's delay in the reduction of the rail price is therefore a direct gain to the rail mills, while there is on the other side no loss from non-receipt of orders for 1905. The railroads are not yet prepared to place orders for next season, or even to figure definitely on their requirements. Unless all forecasts are at fault, the railroads will be more generous in their improvement programs the longer they wait.

The arguments in favor of a reduction in the price of rails have been forceful for a year, but never more so than at present. Of the advances in the spring of 1901, due in part, it seems reasonable to suppose, to the imminence of the great steel merger, all have just now disappeared with the exception of rails. Perhaps too much has been made of the argument that the rail mills held down the price in 1902, and should now come in for payment of a debt of gratitude. The $28 price is a high one under any conditions for rails. An argument, based on *ex parte* evidence, has just been made to the effect that the price does not affect the tonnage, inasmuch as with a low price in 1898 the tonnage was much smaller than in 1900, when the price was high. The fact is that the railroads were much better able to buy rails in 1900, and there is no evidence that they would not have bought much more liberally still at a lower figure. Much more to the point, although not conclusive either, would it be to recall that the 1899 rails cost the railroads a trifle less per ton than those laid in 1898, yet the 1899 production showed a great gain over 1898, nearly three times as great as the gain of 1900 over 1899. Nor did the steel industry lose anything by the 1899 rails being sold so cheap, unless the price boom of 1899 itself resulted in loss, for this boom was in great measure due to the large tonnage of steel put into rails.

It seems pretty well settled that there are to be no important reductions in freight rates, and this again has been urged as a reason for maintaining a high price on rails. But the question of freights is vastly larger than a squaring of accounts between carriers and steel makers. The Northwestern, Southwestern and Pacific railroads get very little freight business from the iron industry. The hauling of any of the raw materials is totally denied them, while from the system of locating the basing point their rails actually cost them much more delivered than Eastern or Central roads must pay.

These Western roads as a class are laid with much lighter rails than are the Eastern roads and the price of rails has a most important bearing upon how fast such rails shall be replaced. New railroad buidling, also, will be largely in such districts. The territory is just opening up and altogether there is an enormous rail business in sight for trans-Mississippi territory, with the price of rails put to a reasonable level. The iron business and allied industries are immeasurably interested in seeing that there is no embargo to the development of this region.

Rail exports to Canada have been killed by the new Canadian tariff, with its dumping clause. Heretofore Canada has been a convenient and important outlet for rails, such exports having varied from 125,931 tons in 1900, when the orders were needed, to 28,081 tons in 1902, when they were not needed. The loss of this outlet will have a bearing upon the fixing of the domestic price when the question is brought up toward the close of this year.

The important consideration in connection with rails, as with every other commodity in steel, is that the prosperity of the steel trade is not to be measured by the amount of profit a given price yields on a single ton of material, but by the aggregate of profit realized on a price basis that encourages railroad building and replacement and that takes account of all the forces influencing financial and industrial conditions.

The Soho furnace of the Jones & Laughlin Steel Co., Pittsburg, was blown in this week after an extended idleness. Extensive repairs have been made to the plant, a new blowing engine house having been built and new engines installed. No. 3 furnace of the Eliza group, after having been banked for several weeks, is again operating, while furnace No. 2 of this plant will be blown out in the near future for relining.

Eliot A. Kebler, Farmers Bank building, Pittsburg, formerly resident agent of Matthew Addy & Co., Cincinnati, dealers in pig iron, steel and coke, has been appointed manager of the Pittsburg branch of this company, his territory covering Western Pennsylvania and Eastern Ohio.

The blooming mill of the Carnegie Steel Co., South Sharon, Pa., resumed operations this week, while the plants of the American Steel & Wire Co. at the same place resumed in full. These plants have been idle for several months.

The men employed at the ovens of the Sharon Coke & Gas Co., South Sharon, Pa., were this week granted an increase in wages amounting to 12 percent, which places them on the basis in force before the cut last November.

The bi-monthly bar iron wage scale adjustment made between the Amalgamated Association and the Republic Iron & Steel Co. showed that the average selling price of bar iron during the months of July and August was 1.20c at mill. On this basis the puddlers will receive $4.90 a ton. The previous adjustment was made on a 1.30c base.

The plant of the Cuyahoga Wire & Fence Co., New Castle, Pa., is being dismantled and the machinery is being sold. The building is modern in every respect and is well suited for manufacturing purposes. The real estate and buildings have not yet been sold.

Owing to the absence of several directors, the scheduled meeting of the board of directors of the Crucible Steel Co. of America, which was to have been held on Tuesday, Sept. 13, has been postponed one week. At this meeting a plan for funding the floating debt of the company will be considered. After this has been decided upon by the board of directors it will be submitted to the stockholders for consideration at the annual meeting to be held on Oct. 19. A circular is also to be mailed to the stockholders of the company detailing in full the conditions of the sale of the plant of the Clairton Steel Co. to the United States Steel Corporation.

Proposals will be received at the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., until Sept. 27, to furnish at the navy yards at New York, N. Y.; League Island, Pa.; Washington, D. C.; Norfolk, Va.; Pensacola, Fla.; and Puget Sound, Wash., a quantity of machine tools, etc., comprising lathes, drilling machine, milling machine, shaper, punching and shearing machines, planer, tenoning machine and traveling crane.

A correspondent asks to be put in communication with a concern that is prepared to coat lead sheets with tin.

The Labor Situation.

WISE ADVICE OF A LABOR LEADER.

In a recent address at Fort Wayne, Ind., Frank Wilson, president of the International Patternmakers' Union of North America, announced views of unusual breadth for a labor leader. He said that where fair-minded men get together to consider grievances, not in the heat of passion, but calmly, and each with a feeling that the other is human and subject to human frailties and weaknesses, there sweet reasonableness can expect a hearing. "When," he said, "we ask our employers for more money for ourselves we must be prepared to show our employers that we are entitled to more and that they should pay it. We have no right to ask for more than we are entitled to. . . . There is one question that frequently causes trouble in the ranks of union labor, and has caused some in ours—i. e., the question of working alongside of a non-union workman. It has always been our policy to persuade, and not force, men into our union. We believe any patternmaker can be made to see the injustice of accepting the benefits secured for him by our union, and still holding aloof from the men who, by their organization, have secured these benefits for him. We argue with the non-union man, we point out to him that he is receiving great benefits for which he pays nothing, and there are not many men who want to be placed in the light of always receiving charity. When a man is persuaded to join the union of his own free will he becomes a better union man than one who is forced to join."

CINCINNATI MOLDERS' STRIKE.

The molders' strike is still on in the twelve foundries affected in Cincinnati and Newport. There are 291 men out and the union is closely picketing all of the shops. A few foundries are nominally running, but an attempt to operate with non-union men will be made this week. The National Founders' Association will send in about 50 men and the Employers' Association of this city will also assist in securing men to take the place of the strikers. The N. F. A. will send a representative to take charge of the strike and the association will maintain a Cincinnati office until the strike is settled. The Cincinnati Employers' Association, in addition to securing men, will look after all of the legal proceedings that may be necessary in the way of injunctions or arrests for violence.

The foundrymen whose shops are struck held a meeting and agreed that no individual agreement should be made by any of them with the Iron Molders' Union without first having obtained the consent of two-thirds of the signers and the consent of the commissioner of the National Founders' Association in writing. The following firms signed the agreement: Victor Knecht & Co., Newport Iron & Brass Foundry Co., Erhardt & Sons, Bollmann & Wilson Co., Charles Lang, Wessling Bros., John Oberhelman & Co., I. & E. Greenwald Co., Buckeye Foundry Co., Eureka Foundry Co., Queen City Foundry Co. and Johannigmann Foundry Co. The foundrymen claim that even with the cut of 20 cents per day the wages of the molders in Cincinnati are as high as anywhere in the country.

AGREEMENT ON A REDUCED BAR IRON SCALE.

The bar iron wage scale of the Amalgamated Association of Iron, Steel and Tin Workers, as agreed to by a board of conciliation, sitting in Chicago for nearly a week, was signed by the Republic Iron & Steel Co. on Saturday, Sept. 10, and another threatened strike in the iron trade has been averted. The reductions from last year's scale average about 10 percent. The new scale dates back to July 1, and the company secures the advantage of this lower wage rate from that date in the case of all the men now in its employ and who have been working since that time. All of the independent iron mills which agreed to operate under the continuous operation clause, until the scale should be agreed to, also have the same advantages under the agreement as the Republic Iron & Steel Co. One week ago this company shut down all of its mills for an indefinite period, as it was evident that unless drastic measures were adopted the scale matter would be long drawn out. Practically all of the mills shut down resumed operations this week. The settlement of this scale will not affect the hoop and bar mills of the Carnegie Steel Co. at Youngstown and Girard, O., where strikes are now on, as the demands of this company differed materially from those of the Republic Iron & Steel Co. The board of conciliation, to whom the adjustment of the scale was left, consisted of three members, Henry W. Heedy, representing the Republic Iron & Steel Co., Benjamin Davis, the Amalgamated Association, and they chose H. A. Marting, of Ironton, O., as the third member of the board. The new scale for 1904-05 as compared with the scale that expired on June 30, last, follows:

Boiling.

Based on actual sales of bar iron, as per conference agreement.

Selling price, bar iron.	New Scale. Boiling per ton.	Old Scale. Boiling per ton.
1, 1.1, 1.2c bar iron.....	$4 90	$5 00
1.30c bar iron.....	4 90	5 25
1.40c bar iron.....	5 12½	5 50

For each advance of one-tenth above 1.4c, 25 cents additional is to be paid. Thus the boiling rate of 2c bar iron would be $6.62½ on the new scale, as compared with $7, the old scale.

The reduction in the busheling scale amounts to 10 percent. On 1-cent bar iron the new scale provides for $2 per ton instead of $2.20. Comparisons of the two scales are as follows:

Busheling on Sand Bottom.

	New Scale.	Old Scale.
1 and 1.1c bar iron.....	$2 00	$2 20
1.2c bar iron.....	2 05	2 20
1.3c bar iron.....	2 10	2 30

With each advance of one-tenth in bar iron, there is to be an advance of five cents, as under the old scale.

Piles on Boards.

	New Scale.	Old Scale.
1c bar iron.....	$1 50	$1 63
1.1c bar iron.....	1 54	1 67
1.2c bar iron.....	1 58	1 71
1.3c bar iron.....	1 62	1 74

In this department there is an advance of 3 cents for each one-tenth advance in the selling price of bar iron. Under the old scale the base was $1.63, with an advance of 4 cents to 1.3c selling price of bar iron, when the advance was only 3 cents to every one-tenth advance.

In the bar and 12-in. mill scale a reduction of 11½ percent for rollers, 10 percent for heaters and 8½ percent for roughers is made. For rolling steel, 6 percent less than the price for rolling iron is to be paid. Skelp rates are only to be paid when 50 percent is made in any period. In the guide mill department the new scale provides for a reduction of 13½ percent for the roller, 10 percent for the heater and 8½ percent for the rougher and catcher.

Under the old scale, according to the last bi-monthly settlement the puddlers and finishers were being paid on the basis of 1.3c bar iron, making the puddler's wages $5.25. Under the new scale, with bar iron on this basis they will receive only $4.90, a reduction of 35 cents a ton.

METAL TRADES ASSOCIATION NOTES.

CINCINNATI, Sept. 12.—The Cincinnati Metal Trades Association is arranging quite an elaborate program for its next quarterly dinner which will take place on Oct. 6.

The N. M. T. A. certificate of recommendation has met with the approval of the executive committee of the Chicago Brass Manufacturers' Association, which has decided to adopt it for the benefit of the faithful and efficient employes of the members of that association.

Commissioner Egan is offering the secretaries of the several local metal trades associations co-operating with the national association space in the monthly publication in which they can set forth a summary of the different reports they have issued to their members.

The executive committee of the New York Metal Trades Association has held two conferences with a committee representing Defender Union and Helpers' Union in reference to renewing the old agreement but have not settled it as yet.

E. F. DuBrul, the ex-commissioner, has about completed arrangements to enter the field of cement manufacture.

There will be a meeting of the Twelfth District committee of the N. M. T. A., which embraces the city of Chicago, the latter part of this week.

Judging from the number of requisitions being received for operatives it would appear that there is a decided improvement in business.

LABOR NOTES.

The molders' strike in the foundry of the George V. Cresson Co., Philadelphia, is still on, but the company finds more men than it can employ to fill the places. The company has posted a notice guaranteeing to all men now in its employ and all who may hereafter enter its employ that their positions will be permanent so long as their conduct and competency and the conditions of its business warrant it.

The 500 employes of the Portsmouth Steel Co., Portsmouth, O., have accepted a 12½ percent cut in wages, and the plant will resume operations Sept. 21.

Owing to the fact that the late Mayor Jones, of Toledo, purchased castings from a non-union shop, the employes of the S. M. Jones Co. were not allowed to march in the union labor procession on Labor Day. The men formed a procession of their own, which attracted much favorable attention.

The *Citizens' Industrial Exponent*, of St. Louis, says: "The iron molders have struck in the shops of Green's Car Wheel Mfg. Co. and the Magnetite Foundry Co., the controversy being the open shop principle. A sufficient number of non-union molders have been secured to operate these foundries continuously and both concerns express their absolute determination to run under the open shop principle hereafter. The National Founders' Association, of which both these concerns are members, are sending in as many molders as can possibly be employed at this time."

The puddlers employed at the Benwood plant of the Wheeling Steel & Iron Co., Wheeling, W. Va., refused to return to work this week, owing to the refusal of the company to sign the Amalgamated scale. Orders were issued several weeks ago to start the mill on Monday, Sept. 12.

The strike of the wire drawers at the American Steel & Wire Co.'s plant at Sharon, Pa., has been settled and the men returned to work Sept. 13. A conference was held between the strikers and the company and concessions were made on both sides. The men accepted the reduction of 20 percent, but were allowed extra help, which will increase the tonnage and make their wages almost equal to what they were before the cut.

The West Side foundry at Watervliet, N. Y., has been dynamited. Considerable damage was done, and a man who rushed to the scene was shot in the right foot by a watchman. The explosion was heard for miles. Employes of the foundry have been on strike for some time.

The United Coke & Gas Co., a subsidiary company of the United States Steel Corporation, on Sept. 12 gave its employes at South Sharon a voluntary increase in wages of 12 percent. The wages are now the same as before the cut made last November. Two hundred are affected.

Several crews have been landed at the lower mill of the Carnegie Steel Co., at Youngstown, O. The plant will be started this week. Little is being done at the Girard plant of the company.

As stated on another page of this issue, the Internation Harvester Co. has shut down for an indefinite period, probably two to three weeks, the McCormick, Deering and Plano harvester works at Chicago. Officials of the company, while not disposed to discuss the suspension, say it was necessary to permit the rapid completion of the inventory and various repairs, as well as an accumulation of raw materials. In the past these have been accomplished with a shut-down of about two weeks, and as all three plants have been idle the greater part of the summer, it is believed the action has some connection with the company's labor agreement. The present agreement with the various labor unions represented among its employes, made after a strike last year extending over several weeks, expires this month, and it is reported the company does not intend to renew it.

THE FOUNDRYMEN'S ASSOCIATION.

The 139th meeting of the Foundrymen's Association of Philadelphia, the first since the summer recess, was held at the Manufacturers' Club in that city on Wednesday evening, Sept. 7. The paper of the evening, which is reproduced elsewhere in this issue, was by Geo. H. Wadsworth, superintendent of the Falls Rivet & Machine Co., Cuyahoga Falls, O., on "Mechanically Made Cores." Mr. Wadsworth, as explained in connection with his paper, had a core machine set up and operated it with current from the club dynamo.

Chas. H. Thomas, of Newark, N. J., president, and Frank C. Everitt, of the J. L. Mott Iron Works, New York, secretary of the Associated Foundry Foremen, were present and explained the objects and the work of that organization, a number of foundry foremen being in attendance. Steps were taken for the formation of a Philadelphia section of the association. A lunch was served after the meeting in the roof garden of the club. The following, among others, were present at the meeting:

H. O. Evans, Thos. Devlin Co.; J. Thompson, J. Thompson Co.; E. E. Brown and C. R. Brown, E. E. Brown & Co.; Geo. Davis, Pilling & Crane; Chas. Perrine, Abram Cox Stove Co.; John Fleming, S. J. Creswell Iron Works; H. C. Matlack, Frank Samuel; F. C. Pullman, J. Wesley Pullman; G. M. Benkert, Williamson Bros Co.; Aug. Williams, Enterprise Mfg. Co.; T. J. Kelly, Thomas, Roberts, Stevenson Co.; Adam Pugh and Luther Shick, Isaac A. Sheppard & Co.; T. B. Harkins, T. B. Harkins Foundry Co., Bristol, Pa.; W. O. Steel and H. Maxwell, Bateman Mfg. Co., Grenloch, N. J.; Wm. Shannon, Bethlehem Steel Co., Bethlehem, Pa.; S. C. Wells, North Wales Foundry Co., North Wales, Pa.; Edward Spurr, the Enterprise Manufacturing Co.; A. Simonson, Wm. Wharton Jr. & Co.; W. F. MacDonnell and Chas. S. Muir, Schaum & Uhlinger; J. S. Hibbs, J. W. Paxson Co.; H. W. Coleman, H. K. Dimmick; Geo. Moyer, Enterprise Mfg. Co.; J. F. Gaehring, J. W. Paxson Co.; C. Gorman, Schaum & Uhlinger; F. P. Stapleton, Thos. Devlin Co.; W. H. Green, Vulcan Iron Works, Chester, Pa.; J. C. Mouer, J. K. Dimmick & Co.; Walter Bickley and M. D. Powell, Penn Steel Casting & Machine Co., Chester, Pa.; Wm. Hanson and Geo. C. Davis.

Rail and Rod Mill Records Broken.

(Special Telegram.)

PITTSBURG, Sept. 14.—On Monday this week the night turn at the Edgar Thompson Steel Works produced 4,723 60-lb. rails. The previous record was 4,115. In an 11½-hour turn at the rod mill of the Donora plant of the American Steel & Wire Co. yesterday the product was 776,260 lb. of No. 3 rods, breaking all previous records. There was a stoppage of nearly a half hour for a break-down.

General Manager Shields, of the Lake Superior Corporation, says regarding the steel rail mill: "The company placed its steel rail mill, with a capacity of 500 tons of rails daily, in operation on Aug. 23, and after 500 heats the quality of rail secured was so entirely satisfactory that on Sept. 6 we put on a night and day shift, and from now on the mill will be run continuously. We are at present at work on a 10,000-ton contract for the International railway for delivery in Montreal. When this contract is completed we will start work on other orders for the same railway, as also for the Temiskaming, and we will go right ahead running the mill and will not have any difficulty disposing of the entire output."

Gabriel Somers has been apppointed receiver of the Sandage Steel Skein Co., South Bend, Ind. It is charged in the complaint that the company last spring sold its most valuable asset, the steel skein patent, to the American Skein & Foundry Co.

The plant of the Inland Steel Co., Indiana Harbor, Ind., is idle in part as the result of a sympathetic strike on the part of 300 gas makers, machinists and bricklayers who decided to support the steel workers who went out last Thursday.

TRADE PUBLICATIONS.

The Goheen Mfg. Co., of Canton, O., has a number of cards illustrating the use made of "carbonizing coating" by the Higgins Oil & Fuel Co. at Beaumont, Tex. One of these shows a standard tank car, one of a lot of 145, painted with "Goheen's carbonizing coating." Another card is representative of the storage tanks. These groups, consisting of 24 steel tanks of 37,500 barrels capacity each, are painted with the same coating and make an impressive display.

Forty types of pumping machinery at the St. Louis Exposition are described and illustrated in a handsome pamphlet, 8½ x 12 in. in size, now being distributed by the International Steam Pump Co., of New York. Under this heading are included not only the many types of pumps exhibited, but also air compressing and steam condensing apparatus, cooling towers, vacuum machines, water meters, etc., etc. The processes in which these machines are employed on the Exposition grounds, such as timber preserving and refrigeration, are fully explained and diagrams and graphical charts are employed to illustrate the design and arrangement of apparatus. A striking view of the Grand Cascade is shown on the cover and the immense Worthington turbine pumps by which the water is supplied are described in the text.

A number of circulars are loosely bound in a cover by the C. E. Sutton Co., of Toledo, O. These describe single and double punches and shears, blacksmiths' punches, forging machines, foot power hammers, milling machines and lathes. The engravings are very clear and the data have been concisely arranged with due regard to the telling points of the machinery exhibited.

The catalogue of the Norton plain grinding machines manufactured by the Norton Grinding Co., of Worcester, Mass., contains considerable information about this make of machinery and is impressive as an indication of grinding possibilities. The heavy machine with anvil bearings has a water capacity of one barrel in the base and forty gallons of water may be delivered to the work every minute. The grinder has been designed by one of the best known men among experts in the handling of abrasives and the catalogue in illustration of machine and work, as well as the description of the tool, tells an interesting story. The frontispiece of the pamphlet shows a view of the plant of the Norton Emery Wheel Co., which has a floor space of 172,074 square feet.

The Beck file is a radical change from previous systems for the drafting room and is illustrated in a pamphlet prepared by the manufacturer, Wm. Polson & Co., of Saginaw, Mich. This filing case permits the withdrawal of any drawing without disturbing the order of the rest or may be exposed for examination without removal from the file. The file consists of a vertical case, 4 in. deep inside, having a hinged top and a front that opens downwardly to form a desk, on which the drawings rest for inspection. Near the top of the case is a pair of hollow steel sleeves from which the drawings are suspended by steel rings secured to their edges. Springs secured to the sleeve keep the rings in place when the case is opened. The hinged top has brass grooves for a series of cards containing an alphabetical index of the drawings which in turn bear index tabs to correspond.

Electric hoists, winches and capstans for direct or alternating current are described in catalogue No. 046 of the C. W. Hunt Co., of West New Brighton, Staten Island, N. J. These machines have many noteworthy features developed in the evolution of that design which is continually overtaken but never overcome by more exacting requirements. The drums, for example, are ventilated. The unavoidable slipping of the friction surfaces of the clutch in starting and accelerating the load generates heat that must be quickly dissipated or in rapid hoisting the friction surfaces would soon be destroyed. The C. W. Hunt Co.'s drum has the spokes twisted to the shape of propeller blades and whether rotating for the purpose of hoisting or lowering loads a current of air is forced over the heated surfaces. That part of the friction clutch in which the heat is generated lies directly in the path of this air current. The band brakes are applied to the end of the drum opposite the friction clutch so that the heat generated in one may not affect the accurate working of the other. The catalogue has a number of small halftones showing various types of hoists and winches and some representative installations. One of these depicts the power plant of the Baltimore United Railways & Electric Co. equipped with steel towers, duplex shovels and electric hoists. The coal is hoisted vertically 151 ft.

An investigation of the Doble needle regulating nozzle was made in the civil engineering department of the Massachusetts Institute of Technology, Boston, by H. C. Crowell and G. C. D. Lenth. The results are very complimentary to the Abner Doble Co., of San Francisco, and the thesis has been printed by the firm in pamphlet form. There are many diagrams and tables showing the efficiency of various nozzles. The reproductions from photographs are particularly good. The peculiar glint of the light reflected from the different streams has been caught quite distinctly.

The Becker-Brainard Milling Machine Co., of Hyde Park, Mass., has been identified with the milling cutter business for a good many years, but, within the last two has greatly enlarged its facilities, installing improved machinery for this work. A large stock of end and face cutters for vertical spindle milling machines is on hand for immediate delivery, also plain, face, straddle and inserted tooth cutters, gear cutters, metal slitting and screw slotting cutters. The company also furnishes cutters made of high speed steel. Its new catalogue contains information and suggestions for users and operators of milling machines and gear cutters.

The American Sheet & Tin Plate Co., of Pittsburg, has a new circular briefly pointing out the purpose of the "Cambridge" rigid reversible metal laths. These are slightly corrugated and are also perforated. The metal is being freely used as a base for cement and plaster for public buildings and the better class of residences.

The department of publicity of the Allis-Chalmers Co., of Milwaukee, Wis., has published "The Book of the Four Powers" which deals in a connected way with the story of the company and its great variety of products. The "four powers" are, of course, steam, gas, water and electricity, and the Allis-Chalmers list of prime movers includes steam engines, steam turbines, water turbines and gas engines. The electrical department, known as the Bullock Electric Mfg. Co. produces every form of electrical generator and motor. The plants are located in Milwaukee, Chicago, Scranton and Cincinnati, and are capable of employing 10,000 men. The mammoth engine on exhibition in Machinery Hall, St. Louis, is the largest two-cylinder engine ever built and we are also told that the largest single piece required a car of 72 tons capacity to carry it to the Fair; 30 cars in all were needed to transport the entire engine. Bullock motors are freely employed in the buildings and grounds and there is a coal testing plant, an exhibit of mining machinery, a concentrating plant and other suggestive examples of the breadth of the field covered by the firm. The book is beautifully illustrated with very many halftones and the pamphlet is an admirable specimen of two-color typography.

A price list of wrought iron pulleys, shafting and friction clutches comes from J. Bagshaw & Sons, Ltd., the Victoria Foundry, Batley, Yorkshire, England. The price list is bound up with pages of rules and tables for the transmission of power by shafts, wheels, ropes and belts; tables of safe loads for steel and iron girders are also included. The patent friction coupling of this company has a wedge moving lengthwise of the shaft and expanding a friction ring by levers, the ring gripping around the interior of the shell. The wedge travels around the shaft with the pulley and is attached to a small grooved pulley worked by a forked lever.

The Watt Mining Car Wheel Co., of Barnesville, O., makes mine cars complete as well as mine car irons, axles, wheels and the Watt channel bar attachment for round axles. The illustrations present views of complete cars and in addition to these is a series of reproductions from photographs illustrating details of car bottoms, spring bumpers and other parts. The catalogue calls especial attention to the increased facilities, the new department for steel cars, the new wood shop and improvements in the foundry.

Telpherage applied to the hoisting, conveying, screening, depositing and storing of coal and coke and the removal of ashes, etc., is discussed in circulars of the United Telpherage

Co., of New York and Westfield, N. J. One of the illustrations shows a telpher with load of coal just before it is dumped into the steel hoppers. The coal was hoisted from the cars by an electric hoist, telphered 1,000 feet up a steep grade and around curves, to be placed in hoppers over the boilers. The empty bucket is then returned and a full one takes its place.

The New catalogue of the Upson Nut Co., of Cleveland, extends to 98 6 x 9-in. pages. The list includes nuts and bolts of all kinds, rivets, screws, washers, clamps, clips, belt fasteners, rules, etc., in very varied shapes and sizes. There is a good index.

The McClintic-Marshall Construction Co., Pittsburg, has issued a handsome booklet, with an illuminated cover, containing handsome illustrations of foundries and machine shops designed and erected under its supervision in the past few years. In addition the booklet contains fine illustrations of the company's plants at Pittsburg and Pottstown, Pa., together with numerous interior views. A new steel flask for foundry use is illustrated, made entirely of channels, which has already replaced the wooden flask in many foundries and is meeting with general favor by the trade. This company makes a specialty of designing, manufacturing and erecting steel bridges, buildings, etc., the two plants having a monthly capacity of 7,000 tons of finished work, being the largest output at any independent plant in the United States.

The trustees of the United Sheet & Tin Plate Co. have made a report to the creditors, appraising the plants at Byesville, Newark, Marietta and Newcomerstown, O., together with 82 town lots at Marietta and 44 at Newcomerstown, at $256,779; also personal property at Marietta at $2,102. The creditors have decided to sell some of the personal property and remove the Newark machinery to Newcomerstown. The Newark plant consists of some corrugating and roofing machinery, while the Newcomerstown plant is a sheet mill which has actually been operated. The Marietta plant is for tin plate, and was operated to the extent of a few carloads. The Byesville plant consists of a wooden framework for a building, and portions of the foundation work for a couple of prospective open-hearth steel furnaces. The trustees and creditors claim ownership in these visible assets, but the people of Byesville claim they belong to them, inasmuch as it was their money, in the shape of installments on a promised bonus of $30,000, which created them.

The Pittsburg Terminal Railroad & Coal Co., with its underlying corporation, the West Side Belt Railroad Co., was acquired last week by the Wabash Railroad. The West Side Belt line extends from the Ohio river, Pittsburg, through to Clairton, reaching a section of territory extremely rich in tonnage, and gives the Wabash a much desired connection into this territory. The road, with switches and sidings, is about 32 miles in extent. In addition to the railroad property, the Wabash comes into possession of a large acreage of coal land, the development of which will insure a heavy tonnage to the west.

The new plant of the Border Bolt & Nut Lock Co., Richmond, Ind., has just been completed. It is a steel and iron building 100 by 40 ft., to which in addition there are sheds and platforms. The machinery is now being installed and when this is done the company will have a bolt and nut plant equipped with the most modern machinery and methods for the manufacturing of its nut-lock device. It is now booking orders and will be able to deliver its product in 60 days. The company has thoroughly tested several thousand samples of its nut-lock and feels it is in position to guarantee its efficiency.

The Phillips & Buttorff Mfg. Co., Nashville, Tenn., which recently completed a new addition to its plant, celebrated the event by entertaining 2,000 people of Nashville with a dance at the plant.

Geo. P. Rhodes has been appointed receiver of the Monongahela Foundry & Forge Co., Monongahela, Pa. Its indebtedness amounts to $56,000.

MODERN TOOLS AND SKILLED MECHANICS.

BY JOHN DRUMMOND.

Is the modern mechanic less able as a craftsman than the mechanic of old? Have modern equipment and method stunted his growth? Or is it mere excess regard for the glory of the good old times that makes one apt to magnify the labors of the pioneer? A professor has recently made some comments upon educational questions and finds fault with the acquirements of the average college product. One of his critics says that the American school boy has before him the best text books in the world and study is made as enchanting as play, more attractive than any recreation of the oldtime school boy. It is further asserted that there is a drawback to this; "just as the perfection of watchmaker's and machinist's tools has wrought a diminution of skill, so that the clever and resourceful mechanic of former days is becoming rare and more rare, so the very improvements of our text books have perhaps worked harm."

The clever and resourceful mechanic lives wherever a toolmaker or any other machinist is turning out special work at short notice with regular shop equipment. Many mechanics are but "handy" men with a majority of "unhandy" traits. They are developed in one direction only and crippled in all others. They may drill or bore with judgment and precision but come to grief with further demands upon their reserve skill. Some of the machines they handle, and handle successfully, were beyond the facilities of the oldtime machinist. These tools have supplemented his efforts; they have taken a good share of his training and embodied it in metal and the product of the machines is held uniform to a degree unknown to the old-timer. The machinist trained to the expert working of metal to exact dimensions works naturally away from the position of a mere attendant upon a machine. His stock of experience looms large with the building of intricate mechanism, fixtures and tools of precision, and here his resource and skill are fertile in the application of means to ends. The greater facilities of the modern shop enlarge his opportunities and cut down the outlay of time. In fact, the main advantage of the latest tools is not that they remove the labor exactions but they enable the workman to do more and hence so much more should be accomplished.

It is true enough that the old mechanic was able to do a great deal. He made his steam pipes of lead, his connecting rods of wood, his main shafts of cast iron, and they made mechanical history. The lathe was his main stay and it is yet the principal shop tool. It was at once boring machine, driller, miller, slotter, gear cutter and dividing engine. And there are shops that still work out the salvation of some unusual job by a revival of an old trick with the lathe. I have all the admiration in the world for the pioneer machinists but I am not ready to admit that the chance for mechanical resourcefulness passed away with the later tools. They have given us a longer reach in the struggle but we are expected to grasp and hold all that we can yet grip with handicraft. We have simply increased our means to do things and men alive to the situation have a better chance. Skill is not a matter of tools only. The fountain pen will not spell better than a quill. Tool improvement certainly means very much to the expert and resourceful. It diminishes the drudgery of the work and leaves the astute craftsman greater freedom in the assertion of his superiority. And no one technically familiar with the very tools which are popularly supposed to prove the opposite, will be ready to admit the inferiority of modern mechanics.

The passing of the chipping tools, the cold chisel and hammer, has come with the advent of pneumatic equipment and the keyseater. The ability to cut a long, straight groove in short order is of little account compared with the demands of other tasks. The latest machinery of the shops is designed for the drudgery of repetition, the cutting of the simpler shapes with minimum demand for each piece of work and therefore a greater product. The few tools of the early workman are now increased by an elaborate array of mechanical aids that, far from doing way with resourcefulness, increase the general scope and working power of designer and mechanic.

After Sept. 15 the offices of the Sweet's Steel Co., for many years at Syracuse, N. Y., will be at the new steel works at Williamsport, Pa., which are now in operation.

IRON AND STEEL INSTITUTE, NEW YORK MEETING

The secretary, Mr. Bennett H. Brough, has issued a circular to the members of the Iron and Steel Institute giving a revised itinerary of the excursions in connection with the coming meeting in the United States. Wednesday, Oct. 26, will be devoted to sessions at New York in the morning and afternoon, for the reading of papers. A reception will be held, given by the New York committee, in the evening.

The party leaves New York at 8:55 a. m. on Thursday, Oct. 27, via the Pennsylvania railroad, and arrives in Philadelphia at 11:20 a. m. The stay in Philadelphia extends to Saturday morning at 9:30 when train is taken for Washington. Sunday is spent there and the start for Pittsburg is made Monday morning, arriving time being 6:30 p. m. Tuesday, Wednesday and Thursday up to 2 p. m. are spent in Pittsburg. The main party goes to Cleveland Thursday afternoon, spending Friday there and Saturday up to 4 p. m., when train is taken for Buffalo. Sunday and Monday are spent at Niagara Falls and Buffalo. On the return to New York from Buffalo on Tuesday, Nov. 8, a side trip can be taken from Albany to Schenectady to visit the General Electric Co.'s plant, as the party will remain in Albany Tuesday night and until 7 p. m. Wednesday.

From Pittsburg those who desire to visit the Louisiana Purchase Exposition will go to St. Louis Thursday, Nov. 3, at 8:10 p. m., spending Friday afternoon, Saturday, Sunday and Monday at the fair. Tuesday and Wednesday will be spent in Chicago and Thursday and Friday at Buffalo and Niagara Falls.

A visit to Bethlehem, Pa., will be made on Thursday, Oct. 27, by those who desire to see that plant. They will leave New York early in the morning and will join the main party in Philadelphia late in the afternoon.

Members Who Will Attend.

The following members—a total of 187— had engaged steamer passage from England up to Aug. 31. In addition 70 ladies are included in the steamer bookings. Other names will probably be added later. It will be noticed that the list includes besides President Andrew Carnegie, four past presidents—Sir James Kitson, E. P. Martin, E. Windsor Richards and W. Whitwell—and one vice president, R. A. Hadfield.

C. Allen, W. E. Allen, T. Atherton.

C. J. Bagley, C. H. F. Bagley, W. R. Bates, Prof. H. Bauerman, P. Bayard, H. W. Bayliss, T. R. Bayliss, W. F. Beardshaw, L. Beijer, J. Bertram, G. G. Blackwell, G. Blackwell, Jr., J. M. Blair, C. E. Bloomer, J. E. Alger Blyde, Edwin Bond, A. Booth, Wm. Booth, Wm. Bright, B. J. Broadway, B. H. Brough, secretary; J. Dixon Brunton, C. E. Bunch, H. Butler, R. W. Burnyeat, Wm. Burnyeat.

Thos. Campbell, E. Carlisle, T. Carlisle, A. Carnegie, president; L. Cassier, E. C. Chalas, F. Cleeves, E. D. Cleghorn, A. Colley, Lieut.-Col. J. H. Cowan, P. N. Cunningham, J. C. Custodis.

W. S. Davie, Harry Davies, W. H. Davies, E. Dickinson, V. J. Diefenderfer, J. Donechay, H. S. Downe, E. Dreux, E. J. Duff, G. R. Dunell.

G. Ekman, E. Espinasse, Christmas Evans, C. K. Everitt.

E. Farnworth, John Fellows, A. Firth, D. Flather, Sir Walter Foster, M. P.; G. E. Fox, H. G. Graves, G. Watson Gray.

R. A. Hadfield, W. Hartley, J. H. Harrison, W. R. Hay, A. P. Head, W. Hill, H. E. Hodgson, Wm. Hodgson, A. Horsfield, S. E. Howell, Herbert Hughes, J. C. W. Humfrey.

C. James, Thos. Jenkins, C. L. Jones, Peter Jones.

R. W. Kennard, James Kerr, J. Kidner, Sir James Kitson, M. P., past president; R. D. Kitson.

W. J. Larke, L. N. Ledingham, John Lees, John Bayley Lees, A. Lennox Leigh, David Lewis, W. R. Lewis, J. Little, J. Livesey, F. H. Lloyd, A. H. Longden, D. A. Louis, D. C. Lysaght.

T. B. Mackenzie, C. F. MacLaren, W. S. B. McLaren, M. Magery, J. Magery, P. J. Mallmann, H. P. Marsh, E. P. Martin, past president; Hugh Martin, H. F. Massey, W. H. Massey, H. Mechan, R. Melhuish, A. C. Meyjes, J. T. Middleton, S. V. Morgan.

C. T. Needham, F. Noake, T. Noda.

J. Paterson, V. Pendred, C. D. Phillips, R. Price-Williams, J. Proctor, A. S. Pye-Smith.

J. Raine, B. M. Renton, Alleyne Reynolds, E. Richards, Windsor, past president; David E. Roberts, W. B. Roberts, L. S. Robertson, Sydney J. Robinson, T. B. Rogerson, F. T. Rollin, R. Russell.

A. Sahlin, E. H. Saniter, F. Sauer, F. Scarf, P. Schmidt, H. Scott, Kilburn; E. G. Sehmer, George E. Senior, A. G. Service, L. P. Sidney, F. C. Siemens, H. C. Simpson, D. T. Sims, Enos Smith, G. H. Smith, R. Sneddon, E. Steiger, S. E. Stevens, C. B. C. Storey, E. Storey, T. W. P. Storey, S. J. Summerson, T. Symington.

B. Talbot, Hubert S. Thomas, F. Timmermans, John Timms, J. E. Touch, William Tozer, A. Turnbull, H. G. Turner, T. Turner.

J. Verity, A. Vosmaer.

H. H. Wake, R. Wallwork, M. Wardlow, H. Waterson, H. B. Weeks, Dr. A. Weiskopf, T. Westgarth, G. H. White, R. Whitehead, W. Whitwell, past president; F. D. Wild, T. Wilkinson, Wilfred Williams, Col. R. S. Williamson, G. P. Wincott, Sir Lloyd Wise, W. W. Wood Jr., J. Woods, R. G. Woodward.

S. Young.

Steel Office Furniture Making Headway.

The complete contract for steel equipment for the building of the registries of deeds and probate, and the probate court room, of Norfolk county, Dedham, Mass., has been awarded to the Berger Mfg. Co., of Canton, O., and involves a large expenditure. The specifications call for steel record cases, plan cases, high tables, sitting tables, counters, bronze grilles, combination cases, typewriter desks, comparing desks, recording desks, flat top desks, roll top desks, judge's desk, witness stand, sheriff's desk, wardrobes and numerous document file cases. Complete steel equipment was recently installed by the Berger Mfg. Co. for the Bureau of Census, Department of Commerce, Washington, D. C.; the law and general libraries in the State House at Trenton, N. J., and the Carnegie Library at Alliance, O. The Berger company has a most complete plant for prompt construction and handling of large contracts. Recently a large steel producing plant was erected by a connected interest at a cost of half a million dollars. A rolling mill plant has been in operation for several years producing the steel sheets from which the company's office devices are manufactured, and an immense steel furniture plant makes the sheets into the finished product. The Arcade Market at Dayton, O., was recently furnished with an entire steel equipment by this company. An illustrated booklet has been published showing the details of construction.

Battelle furnace, Battelle, Ala., went into blast on Sept. 10 and made the first cast on the 12th inst. The furnace begins operation with about 17,000 tons of iron sold, of which 15,000 tons is for delivery this year. The company is not willing to book any orders for next year at the present price. The capacity of the furnace is 250 to 500 tons per day. Freight rate arrangements on this product in relation to Birmingham are as follows: To all of the territory east of Indiana, to and including the western termini of the trunk lines, Battelle enjoys a differential of 35 cents; to points in Pennsylvania, a differential of 25 cents; to points east of Pennsylvania, known as "rail and water points," a differential of 11 cents; to points in Indiana and west, a differential of 10 cents less than the rates from Birmingham.

The Bessemer plant of the American Steel & Wire Co. at the Newburg, Cleveland, works resumed operations Sept. 12. The converters are now the largest in use in this country. J. B. Clark, who had charge of the Bessemer and blooming mills of the Shoenberger plant, fills the same position at the Newburg works. One of the Central blast furnaces of this company at Cleveland has resumed. The other two stacks of the Central plant are being rebuilt.

Walton & Macke, manufacturers of wire nail machines, have the contract to enlarge the equipment of the Kokomo Nail & Brad Co.'s nail department to the extent of 10 tons additional production a day.

MECHANICALLY MADE CORES.*

BY GEORGE H. WADSWORTH.

In the production of good castings nothing is of more importance than the cores. The core must not only form the inside of the casting but must be strong enough to resist the pressure which comes upon it without springing or breaking, and at the same time be porous enough to vent freely. Many attempts have been made to produce duplicate cores by mechanical methods. These methods can all be divided into three classes:

First, those which depend upon sifting or shoveling the sand on to a rotating arbor and then striking it off to the proper form.

Second, those which depend upon the method of ramming the sand into the mold or form, either entirely by machinery or partly by machinery and partly by hand.

Third, machines which form the cores by causing the sand to flow through a properly formed orifice under a steady and uniform pressure.

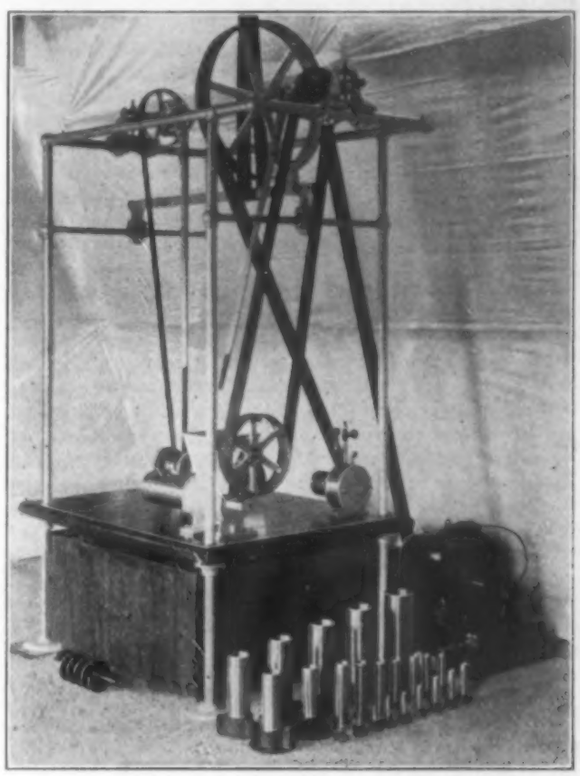
The first class is used very largely in the making of pipe cores and other loam cores, and for this purpose has been found very successful, as it is not a matter of ramming in the loam core but a matter of getting the soft loam in place and properly formed for baking, the loam being so soft that it will flow readily. Hence it cannot be rammed hard in the sense of ordinary tempered sand. This same method has been used to some extent in the making of green sand cores, in which the sand is sifted or shoveled on to the arbor and swept off with a strickle board or sweep. Cores made in this way, either from green sand or loam, always require some facing or blackening, and green sand cores are liable to be very irregular in density at different points, resulting in irregular venting and frequently with the accompanying results of scabs and bad castings. At present there is no machine in general use in this country for making small cores operating upon this principle.

Under the second class, we find a number of types on the market. For the making of short cylindrical cores a stripping core box is in quite common use, especially in Europe. This consists of a plate having one or more holes of the required diameter and fitted with a plunger or plungers for stripping or forcing the cores out of the holes. In this case the cores are rammed by hand and subsequently stripped out by forcing the plunger up, usually with the foot lever. Such a device as this has two disadvantages: First, if a permanent or fixed vent wire is used, the ramming must take place about this; hence the wire is very liable to be bent or crowded out of shape and in drawing through the core is liable to disturb the interior. If no venting device is used, the cores are naturally ventless. Second, it is only possible to make short cores in this manner, as the surface friction would prevent the stripping or forcing of a long core from the box, and it would also be impossible to ram a long core evenly. The forcing of these cores out by means of a plunger would naturally tend to make the lower part more dense than the upper.

Other machines have been devised in which a reciprocating plunger is used to force the sand through the form for producing a long or continuous core, but it will readily be seen that every time the plunger retreats it must leave an impression of its face upon the sand, and as more sand is crowded in front of it a parting would naturally be formed in the core. As a consequence, a machine of this type cannot produce a continuous solid core.

The third class of machine must of necessity be fed by some device which will crowd a continuous and unbroken stream of sand through the die, and the only successful device we know of for accomplishing this is a screw and the machine is of the well known sausage mill type. It looks like a very simple matter to put a screw into an ordinary form and force material through a die to give it the desired form, but it must be remembered that sand is an aggregation of extremely sharp pieces of mineral matter and, when mixed with a bond, as in the core mixture, it is neither fluid nor even semi-fluid, and as a consequence no small amount of skill has been required in dealing with such a mixture. The successful development of a core machine of this type has only resulted after the solution of many little but inevitable problems. It is now possible to produce not only cylindrical cores but cores of any prismatic section, and of considerable length, by this means.

The question of a vent through the core is quite important. The first suggestion would naturally be to introduce a short point on the screw and let it leave its own vent, but this point is constantly rotating and is subject to a very peculiar scour by the sand as it leaves the screw and takes its course into the die. As a result, such a point is soon worn out of true and finally destroyed. It has been found that better results can be obtained by having a hole through the center of the screw and using a stationary vent pin passing through the screw and its shaft and held in position from the outside of the machine. As the core is rotating, the wear upon such a pin is uniform at all points; hence it always remains in the center and always produces a true vent, but one of the very unexpected results with this style of vent has been that the pin is worn very slightly indeed. In this connection, while considering the matter of wear, it may be interesting to state that it was natural to suppose at first that the core machine dies would be cut out very rapidly indeed by the sharp sand, but to our surprise it has been discovered that the wear of the dies is very slight and that they maintain their size and shape almost indefinitely.



WADSWORTH CORE-MAKING MACHINE.

The matter of the feeding of the material into a machine of this type is of importance, as it has been found that a screw must be supplied with material no faster than is necessary to supply the amount of sand for the core being made. If the screw is buried under a large amount of sand, it simply cuts out a cylindrical form, the top becomes bridged over and the screw ceases to feed sand forward.

This type of machine was first used for cylindrical cores and it was found that the core as it came from the machine had a slight rotary motion. This rotary motion resulted in a very smooth surface upon the core and as oil is used for a binder the result is a very smooth surface which requires no blackening or slicking. When it was finally decided to make prismatic cores, it was first supposed that the surface would not be as good as in the cylindrical cores, but by very careful arrangement of the dies it has been found that the die surface

*Read before the Foundrymen's Association at Philadelphia, September 7 1904.

gives practically as smooth a surface in the prismatic cores as in the cylindrical.

For grinding any material, that is, for abrading its surface with an abrasive, it is necessary that the abrasive be set in some bond which will hold its cutting edges firmly in position while they are doing the cutting. In the case of core sand in a relatively large body being forced through a machine, the individual grains are to a large extent free to move among themselves and as a consequence the moment a sharp corner comes in contact with the metal face, the grain has a tendency to rotate about this point and place itself with a flat face in contact with the metal surface. A soft die, or a relatively soft die, is undoubtedly better for this purpose than a hard one, on account of the fact that it gives the grains a better chance and grip for turning. This movement of the individual grains results in a very smooth surface which when baked is hard, smooth and porous and also results in very little wear on the die. A similar action undoubtedly takes place about the stationary vent pin and greatly reduces the wear upon it.

The best cores it is possible to make in a machine of this kind can be produced from a mixture of silica sand, flour and oil. The silica sand should be clean, sharp and free from loam or clay, but as practically all founders use a local bank or lake sand, experiments were made with this class of material and it has been found that very good cores can be produced from any good sharp sand, free from loam or clay, when mixed with the proper proportions of flour and oil. The oil used in most cases has been boiled linseed, but it is probably true that with some sands other core oils may be found valuable. The material is worked drier in this machine than in hand ramming, in fact it would be totally impossible to make good cores by hand from the material when properly tempered for use with the machine.

In this connection it may be of interest to say that some very interesting experiments were tried recently with the use of loam and bank sand without any oil or flour whatever. A mixture of one-half ordinary swamp loam and one-half bank sand is used. This produces a very porous core, having an exceedingly good surface, and a core which drops out or can be cleaned out very easily, as the loam burns out and leaves the core very free. The one point necessary in using such a mixture as this is to be sure to have ample provision for carrying away the vent, as considerable more gas is generated than with ordinary core mixtures.

The question has been asked frequently: "What lengths of cores can be made in this machine?" Thus far the efforts for the production of cores have been confined to a length of 24 in., but recently an experiment was made to see what length could be reached. The result was a core 10 ft. 6 in. long and 6 in. in diameter, made without any difficulty. If any firm desired to go to the expense of sufficiently stiff supports tor receiving the core, there is evidently no reason why cores of considerable length cannot be made without any difficulty.

As most foundries are using hand-made cores, it may be of interest to compare the machine-made with the hand-made product. In the first place, practically all hand-made cores are rammed with some form of rod, which must of necessity result in very unequal hardness in different parts of the core, hence in unequal venting. The core mixtures necessary for hand-ramming have to be worked wetter than those for the machine, which takes longer and considerably more fuel to bake. When the core is rammed in a core box, the sand remains at the point in the box with which it first comes in contact, and is simply compressed in that position. The result is that the grains of sand on the surface of the core may lie in any position, hence cannot give as smooth a surface as is the case when the sand is forced through a die, which slicks the surface. It is true that some hand-made cores are used without blackening but in most cases blackening is necessary. I believe that with the proper selection of core mixtures, blackening can be dispensed with on practically all small machine-made cores, such as can be made with a machine of the type which the writer has the pleasure of demonstrating before you this evening.

[In connection with his address Mr. Wadsworth made a demonstration of the work of his core-making machine, a view of which is given in the accompanying illustration. A complete machine had been set up and the inventor showed its method of operation by manufacturing round cores in sizes from ⅜ in. up to 6 in. To the right of the machine, in the accompanying view, is shown an electric motor which furnishes the necessary power. It is possible, however, to use either compressed air or steam in connection with the small motor shown on the stand near the machine. It may also be driven by belt, where shafting is employed for power transmission, and it is possible in producing the smaller sized cores to operate it by hand. The product is not confined to round cores, but includes also square, hexagon, oblong or T shapes.]

An Extraordinary Compressor Contract.

S. Pearson & Son, Inc., who are building the Pennsylvania railroad tunnels under the East river and Long Island City, have awarded the contract for two complete compressed air power plants ready to operate to the Ingersoll-Sergeant Drill Co., of New York. The combined capacity of the plants is 50,000 cubic feet of low pressure air per minute and 12,000 cubic feet of high pressure air per minute. The same company recently received an order from the O'Rourke Engineering & Construction Co. for the compressed air plants to be used in building the Pennsylvania tunnel under the Hudson river. The contract just awarded is the largest order ever placed in the history of the business. It includes eight 16-in. and 34-in. and 26 ½-in. x 42-in. semi-Tangye frame Corliss air compressors; two 16-in. and 34-in. and 22 ¼-in. and 15 ½-in. x 42-in. semi-Tangye frame Corliss air compressors; two 16-in. and 34-in. and 15 ½-in. x 42-in. semi-Tangye frame Corliss air compressors; ten 57-in. iron body vertical after-coolers; ten 54-in. x 12-ft. vertical air receivers; two 60-in. x 14-ft. vertical air receivers.

The equipment for these plants will consist of the following: Ten 500-h. p. Stirling boilers, two complete gravity oiling systems, ten feed water controllers, four forced draft fans and engines, six 12 and 7-in. x 12-in. duplex feed pumps, two 3,000-h. p. open feed water heaters, six surface condensers, six air and circulating pumps for condensers, two hot well pumps, six 3,000-gal. centrifugal circulating pumps with engines, six oil separators for separating oil from exhaust steam, two air intake conduits and stacks, steam piping and covering, exhaust piping and covering, steam separators, boiler feed piping, circulating water piping, guard rails, drip system piping. This order covers two complete plants erected on foundations and is the largest order ever secured in the history of the business. These plants will be erected by the Ingersoll-Sergeant Drill Co. under the supervision of J. H. Jowett, sales manager of the company.

"Points of Interest" at the Louisiana Purchase Exposition deals with the showing made by the Northern Electrical Mfg. Co., of Madison, Wis. The main exhibit of the company is at Section 14, Palace of Electricity, and here are gathered modern types of machine tools and other industrial machinery arranged for electrical operation by Northern apparatus. All these machines are shown in operative condition, each machine ready to do the work for which it was intended. The motors of the firm's construction are in use by a number of the exhibitors in Machinery Hall, the Manufacturers' building, the Agricultural building, the Education building, Liberal Arts building and the Forestry building. The Ferris wheel has three 45-K. W. generators, three generators are in the Philippine exhibit and in the mining gulch is a 5-h. p. motor operating Leschen & Co.'s system of rope transmission. The booklet gives a complete list of the apparatus installed and there are several illustrations of notable equipments.

During the year ending June 30, 1904, $880,549 was paid out in bounties by the Canadian Government on pig iron and steel ingots. This is $521,255 less than during the preceding year. During the year ending June 30, 1903, bounties on pig iron, puddled iron bars and steel ingots, to the extent of $1,401,804, were divided as follows: Algoma Steel Co., Ltd., $48,297; Canadian Iron Furnace Co., $87,472; Deseronto Iron Co., $18,675; Dominion Iron & Steel Co., Ltd., $960,979; Hamilton Steel & Iron Co., Ltd., $148,275; John McDougall & Co., Drummondville, $5,243; and Nova Scotia Steel & Coal Co., Ltd., $132,860.

RECENT DEVELOPMENTS IN STEEL-MAKING.

John Birkinbine, consulting engineer of the Colorado Fuel & Iron Co., addressed the Colorado Polytechnical Association at Pueblo, Col., recently on "Latest Developments in the Manufacture of Steel." He sketched in a comprehensive way the improvements in the methods employed in steel manufacture in the United States from the beginning to the present time. A synopsis of the address following the introductory portion is given below:

The United States may be considered as young in the manufacture of iron and of steel, for although the initial enterprise started in Virginia dates back 280 years, this was unsuccessful, and the first production of pig iron is accredited to Massachusetts in 1645. The New England States and New Jersey antedated the present large producer, Pennsylvania. Those who are familiar with the history of the plant at Pueblo, recognizing that it has a life of less than thirty years, need not be reminded how many changes have been made in that time. There are probably but few who are familiar with these, but if we look back but five years, the marvelous difference between the plant of 1899 and that of 1904 may be recognized.

The real progress in pig iron production dates from about 1840. Up to that time practically all of the pig iron had been produced in cold blast, charcoal furnaces of small dimensions, and any advance was in the size of the furnace so as to get a larger product. About 1840 the blast furnace was increased in size and expanded in dimensions to utilize mineral fuel, with hot blast and more powerful blowing apparatus than had up to that time been within the range of the machine shops of the country. Most of the earlier blowing apparatus consisted either of large bellows, or of wooden blowing tubes, sometimes rectangular and sometimes circular in cross section, in which wooden pistons moved, and which were packed with leather. The furnace proper was a massive stone stack thirty feet high, thirty feet square at the base, which enclosed the refractory lining, generally of shale, sometimes of brick. The bosh diameter seldom exceeded nine feet. A plant was kept in operation from eight to nine months of each year by a water wheel, operating either pistons in wooden cylinders, or large bellows. Any furnace prior to 1840 which produced 100 tons of pig iron per month was a marvel. As many of the plants turned out no more in a year than one of the large furnaces of the present time produces in a day, it can be readily understood that the methods then employed would be impracticable now. It would be impossible to keep up a supply of fuel from nearby woodlands; to assemble enough wagons and horses to haul this fuel and the ore and the limestone, without interfering with each other about a blast furnace; and the army of men which would be requisite to handle all of this material by pick and shovel, would be prohibitive, if applied to a single furnace of the capacity of those now built. Two to four tons per day was the average output of a furnace, offering no encouragement to use labor-saving appliances, if such had been available. Water being the power employed to furnish the blast, necessitated the plants being located upon streams where this could be obtained. In addition, facilities for obtaining wood for charcoal, and ore were necessary, and this placed the blast furnaces away from commercial centers. With the introduction of mineral fuel, the limitations of locations for blast furnaces were lessened, and the construction of railroads and canals made the assembling of materials and transportation of product easy, thus permitting of the furnace being located at or near commercial centers, and also admitting of greater dimensions. At the present time about a thousand tons of charcoal iron are produced in the United States daily, and the number of furnaces is sma... The dimensions range from 11 to 13 feet, bosh diameter, height from 50 to 60 feet, and they are scattered about the country, most of them being in Alabama, Tennessee and the Lake Superior region.

With the improvements of the steam engine and the equipment of machine shops larger furnaces were encouraged, and the open top of the furnace was changed by the introduction of the bell and hopper; gas was forced to the ground level and used to heat the stoves and supply fuel for the boilers. At the present time nearly 80 percent of the iron ore used in this country is smelted with coke, yet there was no coke regularly employed for this purpose prior to 1840. While the size of the furnace and its equipment have been greatly advanced, the number of plants is less today than 30 years ago. In fact we make nearly ten times as much iron with fewer furnaces than we had in 1870. About half of the output of the furnaces at the present time is of the Bessemer grade, and the quantity of basic pig iron for open-hearth steel is increasing constantly. Until within comparatively late years steel production was confined to the crucible method, but the introduction of the Bessemer and open-hearth processes has done much to enlarge the demands on all furnaces. Up to 1880 the output of a single furnace of 100 tons per day was phenomenal. We have had from some of the "Jumbo" furnaces reported products of as high as 800 tons per day as a spurt.

The fire brick stoves, now so common, have a history in this country of less than 30 years. The first were 13 or 14 feet in diameter and about 25 feet high; now some are 25 feet in diameter and 100 feet high. There have been many changes in the interior shape of the blast furnaces, and the proper diameter of crucible, slope of bosh, relation of bosh to diameter of stock line, and the height of furnace are all mutable questions among blast furnace experts. Some of later construction have undoubtedly exceeded limitations which good judgment would suggest. The slope of the bosh, originally that of about a saucer, was steepened until there was practically no bosh. Now an intermediate taper is generally accepted as the most desirable. A large amount of thought has been given the boiler equipment and blowing engines until now high-duty cross-compound engines are in use. At the present time there is a liberal amount of attention being bestowed on the utilization of furnace gas direct, using it as a means of power the same as gasoline in an automobile.

Nothing has done more to advance the iron manufacturing industry than the devolopment of iron ore mines. This has been prominent in the Lake Superior region which now produces more than three-fourths of all iron ore mined in the country. Some mines are wrought with remarkable economy, the ore being handled with mechanical appliances so that little of it is really touched by man from the time it leaves its natural bed until it is dropped into the furnaces. This holds true of most of the ore supplied to the Colorado plant. Steam shovels load the ore into cars; this is dropped into bins, shot into scale cars and then to the skip cars and carried to the furnace, without being touched by the hand of man. Steam shovel mining has its disadvantages, as it does not admit of discriminating as closely as with other methods, for what is taken up by the shovel reaches the furnace practically without an opportunity of correcting any deficiencies. The economies in handling ore have been followed by similar economies in coal mining and coke manufacturing, and in the operation of blast furnaces. Metal formerly cast into pigs and broken by hand is now carried to the converter or open-hearth furnace in the molten state in ladle cars, or is cast in machines which deliver it in pig form sufficiently cool for transportation.

In the growth of the iron industry it is natural to anticipate changes from individual ownership to partnership and then that corporate control should follow. In former times an individual or one or two partners owned the iron ore mines, limestone quarries, woodlands and blast furnaces; now, the amount of money invested in a single furnace being from $750,0000 to $1,000,000 with a number of these combined in a plant, necessitating the control of supplies of fuel, ore and flux, and the advantage of associating the furnace with converting and manufacturing plants, have necessitated that these industries pass largely into corporate control, and it is but natural that many of these should have been assembled under one general management. Whether this like some other features has been carried to extremes is a subject open for discussion.

The assembling of the raw materials at various places in the country is a question of much interest. As stated before, more than three-fourths of the ore comes from the Lake Superior regions. This ore is smelted in Eastern Ohio and Western Central Pennsylvania and in West Virginia, with coke made from coke mined in the same States. It is also the basis of the important industry about Chicago, which draws its fuel supply from Western Pennsylvania and West

Virginia. At Birmingham, Ala., the raw materials are closely grouped, coal, ore and limestone being obtained within a radius of a few miles from the blast furnaces. The relative leanness of the ore and its high phosphorus overcome some of the apparent advantages. On the seacoast much of the ore used is imported from Spain and Cuba, but even here the Lake Superior ores meet the foreign ores. Colorado covers a wide area in bringing its raw materials together, at present making demands upon Colorado, Wyoming and New Mexico, but the total mileage required to bring the material for one ton of pig iron does not show to serious disadvantage when compared with some of the furnaces in the East which depend on the Lake Superior region for their ore supply.

BUSINESS DEPRESSION IN ENGLAND.

United States Consul Stephens, at Plymouth, Eng., quotes from the London *Mail* concerning the unfavorable economic conditions in England. That paper has been publishing articles on the general want of money in the country. Throughout the present year banking companies, railway companies and industrial concerns have been complaining of the depressed condition of trade, of the diminished spending power of the community, and of the economical spirit abroad which has adversely affected nearly every industry in the land. In the southwest of England the stagnancy of industry and the steady shrinkage of business is seen on every side. The complaints from all are melancholy. Business is bad, desperately bad. "This prevalent epidemic of poverty," says the *Mail*, "is ascribed to various causes by various authorities, but no one denies that it exists. The chairman of the *Financial Times* asserts that the past two years have been 'worse than those which followed the Baring crisis,' while Sir William Ingram tells us that he 'can scarcely remember any one year to be compared with last year.' Yet there is no real ground for surprise at what is happening. In the first place, foreign competition has increased and is increasing to a degree which menaces the stability of British industry. Strongly intrenched behind his own tariff wall, the foreign manufacturer and producer is destroying British trade. What we used to make at home we now buy abroad; the money which used to be invested at home in British industry is now invested in other lands, where a tariff gives security; the money that used to circulate from hand to hand in this country leaves it for Germany or the United States. Concurrently with this great development of foreign competition we have had heavy borrowing to pay for the war and, over and above that, heavy borrowing for various municipal enterprises."

These vast expenditures by English municipalities have not been so successful as was reasonably expected. In many instances the national government has had to step in and arbitrarily take over the management of affairs. This has just happened at Plymouth. Further drafts are constantly being made upon the already overburdened taxpayers. Expenditures must continue, and only legislation of the most sweeping character can bring better conditions.

The following is from the Pittsburg *Gazette:* A San Francisco manufacturer, Mr. John C. Shipp, who has just returned from a long visit to his old home in England, says that commercially and industrially things are very much depressed over there, and adds that "to my notion they will remain so until that country adopts the common-sense remedy proposed by Joseph Chamberlain." England is at present feeling the industrial reaction as it has not in years. That country has become the dumping ground of manufactures from the United States and Germany in particular and from every country that excels in manufacturing. Mr. Shipp is well qualified to discuss conditions in England, for he is a native of that country. He has been in the United States for fifteen years, which is long enough to become acquainted with the great value of American methods and the American protective tariff. He says antiquated methods are a heavy drawback to Great Britain, but the chief trouble is the want of a protective tariff.

Breitung Hematite and Mary Charlotte mines at Negaunee are running again, the former with full day and night crews, the latter only at the stockpile. They are shipping ore to the Lake Superior company at the Sault.

INDUSTRIAL SUMMARY.

[If you are in need of machinery of any description, please notify *The Iron Trade Review*, and we will put you in communication with our advertisers at once.]

New Buyers in the Market and Some of Their Wants:—

The Thomas Wrigley Co., Chicago, has been incorporated with a capital of $2,500 to manufacture machinery, tools and supplies. Incorporators are: Thomas Wrigley, Samuel W. Packard, and Charles F. Nessel.

The Match & Merryweather Machinery Co., Cleveland, O., has been incorporated with a capital of $50,000. Incorporatros are: G. E. Merryweather, E. R. Match, C. C. Young, J. A. Fenner, and C. L. Stocker.

The Globe Pneumatic Tool Co., Lyons, N. Y., has been incorporated with a capital of $100,000. Directors are: P. S. Hill, F. M. Van Wagoner, and F. A. Clarv, of New York City.

The International Railway Device Co., St. Paul, Minn., has been incorporated with a capital of $500,000. The company will manufacture a patented railway device. The incorporators are: W. Oakley Stout, Donald Grant, Edward Yanish, F. G. Bradbury, and F. M. Catlin.

The Turney Drier Co., Louisiville, Ky., has been incorported with a capital of $500,000. The incorporators are: J. W. Biles, Albert G. Ronald, and Walter S. Adams. The new concern is the reincorporation of the Turney Drier Co., of Illinois, which for some time has been in the hands of the Columbia Trust Co., as trustee. J. W. Biles, former president of the old company, will be president of the new. The company will manufacture driers and dry press machinery.

The Dodson Plow Co., Columbus, Miss., wants estimates on engine and boiler, line shafting, belting, cupola, hangers, band saw, etc., for implement works.

The Scott National Radiator Co., Marion, Ind., has been incorporated with a capital of $25,000. The five members of the company are: Elwood Scott, Elmer Scott, Edgar L. Hampton, Warren Gardner, and Alonzo E. Cloud. The company will manufacture a heating stove invented last winter by Rev. Elwood Scott.

The Atlas Metal Works, Dallas, Tex., have been incorporated with a capital of $25,000 to manufacture metal of all kinds, acetylene gas machines, steel cisterns, storage tanks for grain, oil, etc. The incorporators are: E. H. Conibear, Vern W. Jones, and Milliard Storey.

The Wisconsin Bridge & Iron Co., North Milwaukee, Wis., advises us that it does not expect to add much, if any, equipment to its new addition, as that building was made to provide additional room for present equipment.

The George W. Peter Implement Co., St. Louis, will add to its equipment enough machinery to build its compound automatic equalizer, an invention embracing the principles of compound leverage and reverse motion.

The Platt Iron Works, Dayton, O., have been incorporated with a capital of $800,000, to manufacture machinery. Incorporators are: E. E. Platt, J. Sprigg McMahon, George B. Smith, E. F. Gallaudet and R. B. Fetter.

The Detroit Steel Product Co., Detroit, Mich., has been incorporated with a capital of $50,000. Incorporators are: John G. Rumney, John H. Avery, Walter S. Russell, Henry Russell, N. D. Carpenter and John G. Rumney, trustee.

The Louisville Machine Co., Louisville, O., has been incorporated with a capital of $10,000. Incorporators are: John Keim, Levi Warstler, Oliver Brumbaugh, Mahlon J. Keim and Paul F. Loichot.

The Globe Pneumatic Tool Co., Lyons, N. Y., has been incorporated with a capital of $100,000. Incorporators are: F. M. Van Wagonen, P. S. Hill, H. T. Mead, all of New York.

New Construction:—

The Chicago Writing Machine Co. has nearly completed the buildings of its new plant at Galesburg, Ill. The main structure is two stories, 40 x 200 ft.

The new plant of the Graham Nut Co., Allegheny, Pa., has been completed and put in operation. It is of brick and steel construction and will employ 75 men.

The Mobile Stove & Pulley Mfg. Co., Mobile, Ala., has been incorporated with a capital of $50,000 to take over the business of Wm. Edgar at the Edgar Foundry & Mobile Stove Works.

Mr. Edgar will be president of the new company, which will manufacture stoves, pulleys, gearing, grate bars, etc. Several new buildings are in course of erection. The new stove foundry is 90 x 120 ft. and will employ 70 men. The machine shop, 90 x 60 ft., will contain the necessary equipment for the manufacture of pulleys on a large scale, and is expected to be ready before the end of the year. Mr. Edgar has been very successful as an inventor of machinery, his most successful invention being the Edgar patent grate bar, now extensively used in saw mills in the Southern states.

The Tennessee Iron & Land Co. will build a 100-ton blast furnace at Dickson, Tenn. The company has been organized with a capital of $1,500,000 and has purchased 300 acres of iron ore land. The following officers have been elected: S. E. Hunt, vice president; W. M. McMurray, treasurer; S. M. Grandy, secretary; W. C. Smith, assistant secretary; J. O. Griffith, manager; and W. W. Smith, assistant manager. The president has not yet been elected.

No. 2 blast furnace of La Belle Iron Works, Steubenville, O., will probably be ready for blast before Oct. 1. The capacity will be 450 tons.

The United States Steel Co., Canton, O., has successfully started the open-hearth and blooming mill departments of its new plant, and is now producing billets, sheet bar and universal mill plate.

The Brown & Sharpe Mfg. Co., Providence, R. I., has begun the erection of an addition to its shops, 112 x 51 ft.

The Southern Electric & Mfg. Co., Anniston, Ala., recently organized with a capital of $100,000, will erect a new plant, including machine shop 96 x 60 ft., to be equipped with modern machinery.

The Tuthill Spring Co., Chicago, will rebuild the warehouse which was destroyed by fire Aug. 12.

The Barnard & Leas Mfg. Co., Moline, Ill., has purchased a tract of land in that city. The company expects to build a foundry, but probably not this year.

The Atlantic & Birmingham Railway Co. has begun the erection of its railroad shops at Waycross, Ga. Recently the company purchased large additional ground space next to the present shops, and on this ground the new structures are being erected.

The Syphers Machinery Co., Spokane, Wash., will rebuild its plant, which was destroyed by fire on Aug. 8, but will not be in the market for new machinery.

The Lorain Steel Co. will add another building to its large plant at Johnstown, Pa. It will be 250 ft. long and 160 ft. wide, and will be of fireproof construction throughout. The American Bridge Co. has been awarded the contract for erecting the steel work.

The Columbia Tool Steel Co. is preparing extensive plans for its plant to be built at Chicago Heights, Ill. The main building will be 75 x 350 ft., in addition to which there will be a power house and other buildings. The boilers will be operated by waste heat from the heating furnaces.

John C. Cummings, president of the McGuire-Cummings Mfg. Co., Chicago, is building a plant at Paris, Ill., which will be used as a place for assembling parts of cars manufactured in Chicago. The buildings will include an erecting shop 152 x 565 ft.; blacksmith shop, 65 x 75 ft.; machine shop, 60 x 75 ft.; truck shop, 60 x 75 ft.; wood shop, 150 x 200 ft.; cabinet shop, 150 x 200 ft.; and several other buildings. Considerable new machinery will be required.

The plant of the Imperial Steel & Wire Co., Collingwood, Ont., is nearly completed and its product will be in the market this month. The plant will have a capacity of 100 tons of wire daily. The buildings are brick, consisting of boiler house 40 x 35 ft., an engine room 50 x 30 ft., a wire cleaning and acid mill 100 x 70 ft., a wire drawing mill 200 x 60 ft., a wire nail mill 200 x 60 ft. and a galvanizing mill 225 x 50 ft. The buildings are served by two railway switches and cover an area of about five acres. It is expected that a 100-ton wire rod mill will be built later.

The new plant of the Scott-Oliver Mfg. Co., Knoxville, Tenn., will be in operation in two weeks. This machine shop and the foundry are the largest of their kind in the South.

The Twin City Rapid Transit Co., Minneapolis, Minn., has plans practically completed for the fine new buildings which will comprise its new car shops. The company owns a site of nineteen acres, of which eight acres are to be covered with buildings. The new car house will cover 3.2 acres and will cost between $175,000 and $200,000. A motor repair shop will be 250 x 90 ft.; a machine shop, 250 x 60 ft.; a truck, frog and blacksmith shop, 150 x 100 ft.; a foundry, 100 x 75 ft.; an iron house, 75 x 25 ft.; and power plant, 100 x 100 ft.

George Frietag and W. H. Shurley, of New Decatur, Ill., are building a foundry at Guthrie, Oklahoma Territory. The building will be 40 x 80 ft.

The Bromall Iron & Steel Co., Belington, W. Va., recently incorporated, will operate a complete rolling sheet mill; also a planishing mill. The planishing mill which the company built at Parkersburg, W. Va., will be moved to Belington. The company will also make its own sheets for the planishing mill. The plant will be complete for turning out sheets and planishing them. The company has made arrangements for all its equipment.

The United States Cast Iron Pipe & Foundry Co. has repaired the damage done by the recent fire at its plant at West Superior and the plant is now in operation.

Excavating for the new plant of the Peoria Steel & Tool Co., Peoria, Ill., was begun Sept. 6. The plant will be finished as soon as possible.

The construction of pipe yards, pipe and general repair shops has been commenced at Muncie, Ind., by the Indiana Pipe Co. The plant will cover more than an acre. A specialty will be made of pipes for oil wells.

The new foundry of the Racine Boat Mfg. Co., Muskegon, Mich., will be ready for occupancy about Oct. 1. The new building is 60 x 100 ft. with a wing 30 x 65 ft.

The Delaware & Hudson railroad has broken ground for a large repair shop which it will erect at Albany, N. Y. The The structure is to be 500 ft. in length, one story.

Plans have been drawn and bids are now being received for the erection of a large cutlery works at Scottdale, Pa., by the F. A. Black Mfg. Co. One building will be one story, 44 x 113 ft., while another will be two stories, 99 x 74 ft. The buildings will cost $60,000 not including equipment.

The Victor Talking Machine Co. will erect a plant at Camden, N. J., to cost about $150,000. The plant will be four stories, 70 x 170 ft. The power house will be two stories, 50 x 60 ft.

General Industrial Notes:—

The Talbot open-hearth furnace of the Jones & Laughlin Steel Co., Pittsburg, after being relined resumed operations this week. During a run of ten weeks this furnace has been tapped 353 times for a total of more than 18,000 tons of steel.

The report that stack No. 3 of the Clairton plant of the Carnegie Steel Co., Clairton, Pa., is to resume operations this week, has been officially denied. No orders have yet gone out to place this stack in operation. Ten of the twelve open-hearth furnaces at this plant are in operation, one of the furnaces having turned out 4,000 tons in one month.

The Bessemer plant of the Republic Iron & Steel Co. Youngstown, O., resumed operations this week after an idleness of about ten days.

No. 2 furnace, operated by the Shenango Furnace Co., Sharpsville, Pa., was blown out last week for repairs and improvements. Four McClure hot blast stoves are being added to this plant.

The Riverside Metal Refining Co., Inc., has succeeded to the business of the Riverside Mfg. & Supply Co., Ltd., Connellsville, Pa. This company smelts, refines and manufactures Babbitt metals, spelter and phosphor bronze. The officers are: E. T. Norton, president; W. G. Marqua, secretary; John L. Gans, treasurer; and T. E. McDermott, superintendent.

Taylor, Wilson & Co., Ltd., Allegheny, Pa., founders and machinists, have been succeeded by the Taylor-Wilson Mfg. Co., with a capital of $25,000. The incorporators are: Robert Taylor, H. M. Wilson, Charles Menges, J. H. Johnston and J. J. Hill.

The Finished Steel Co., manufacturer of polished shafting and special shapes, Youngstown, O., has not closed its plant as reported.

Heyl & Patterson, Pittsburg, have been awarded the contract for the erection of the coal haulage machinery for a

large coaling dock to be built at New Orleans, by C. Jutte & Co., Pittsburg. The hoisting apparatus will have a capacity of 2,500 tons daily.

The Mesta Machine Co., Pittsburg, has been awarded the contract for the erection of a 28 x 71-in. plate mill for the Allegheny Steel & Iron Co., for installation at the company's steel plant at Avenue, Pa. This mill will have a two-high roughing and a three-high finishing stand of rolls. The contract for a heavy duty Corliss engine, 36 x 60, was also awarded the Mesta Machine Co. The Interstate Steel Co., allied to the Allegheny Steel & Iron Co., awarded the contract for two 26-in. sheet mills to the Mesta Machine Co.; and the order for a 34 x 60 Corliss engine also went to this company.

Brown & Co., Pittsburg, will greatly increase the output of their finishing department by the addition of a 20-in. train of sheet mills, on which skelp sizes can be rolled. The contract for a 26 x 42-in. piston valve engine and the sheet mill was awarded to the Mesta Machine Co., of Pittsburg.

The Defiance Machine Works, Defiance, O., has recently made some important additions to its machine tool equipment. The company has been very busy and the additions have been made to meet the demand of increasing business.

The management of the Leighton-Howard plant, formerly the Shickle-Howard Iron & Steel Co., East St. Louis, Ill., has announced that the plant will be re-opened Oct. 1. It has been idle for the past year.

The Dodson Plow Co., formerly of Humboldt, Tenn., has removed its plant to Columbus, Miss., to manufacture plows, cotton scrapers, cotton planters and other agricultural implements.

The Rudge Pattern Works, 38 South Water street, Cleveland, has succeeded the American Pattern Co. W. H. Rudge, who was formerly a part owner, is now the sole proprietor.

The Lake Superior Corporation, Sault Ste. Marie, Ont., has added a night shift to the force of men employed at the steel plant, and the plant is now in operation continuously twenty-four hours a day. Work on the blast furnaces is to be pushed, and it is to be expected that they will be ready for operation about Oct. 1.

After being banked for eight weeks, the Nittany iron furnace, at Bellefonte, Pa., has been put in blast. The Nittany Iron Co. has been reorganized by the election of Noah J. Swayne, of Georgia, as president and general manager, vice J. W. Gephart, resigned.

The organization of the Peoria Steel & Tool Co., Peoria, Ill., has been completed by the election of the following officers: Frank H. Farnham, president and general manager; E. R. Carter, vice president; Ralph N. Bailey, treasurer; F. A. Rogers, secretary. George T. Page was appointed attorney. A site for the plant has been selected.

The Hanika Iron Works, Celina, O., have passed from under the care of Deputy Marshal Wagner into the hands of Dr. G. J. C. Wintermute as receiver. Marshal Wagner has made a report showing that the net receipts of the plant during the month he was in charge were nearly $1,200 in excess of expenses. C. Hanika Sr., has been appointed manager and A. B. Paul will continue as superintendent of the foundry. Work has been resumed at the plant, which was closed July 23.

The new No. 3 blast furnace of the National Tube Co., at Lorain, O., was blown in Sept. 9. It is expected that No. 4 furnace will be finished within a month.

The extensive Pennsylvania railroad shops at Altoona, Pa., were ordered on full time of 54 hours a week on Sept. 7. Fifteen thousand working men are benefited by the order. The number of employes at the Harrisburg, Pa., shops has been increased. The Panhandle railroad shops at Logansport, Ind., which had been operating on a five-hour day since last June, have resumed almost full time, the order from headquarters putting the shops into operation for nine hours five days in the week and five hours on Saturday.

The Ridgway Machine Tool Co., Ridgway, Pa., is now running its machine shop on a limited scale, making machines and tools for its own use. The foundry is being operated on half time, but it is expected that the entire equipment will be installed within a few weeks. The company is ready to take orders for lathes, planers, radial drills and boring machines.

Fire was started Sept. 1 in the 10-ton open-hearth furnace of the Birmingham Steel & Iron Co., Birmingham, Ala. The first steel was made a week later. The company will continue to do general foundry and machine business.

The New Phoenix Foundry Co., Chattanooga, Tenn., recently organized, has purchased the plant of the Phoenix Foundry Co., which is fully equipped.

Dodge & Day, engineers, Philadelphia, have just placed orders for two horizontal high-speed engines, 160 and 240 h. p. respectively, with the Ames Iron Works, Oswego, N. Y.; 600 h. p. of tubular boiler with Ervien & Co., Philadelphia, and 100 and 150 k. w. generators with the Crocker-Wheeler Co., Ampere, N. J., for the Victor Talking Machine Co.'s new plant in Camden, N. J.

The spike department of the Minnequa plant of the Colorado Fuel & Iron Co. has resumed operations. It is expected that for the present the plant will be run with but one shift of workmen, turning out about 600 kegs of spikes per day. The rod mill has also resumed operations. Two of the blast furnaces of the plant which have been undergoing repairs are again ready for blowing in. It is not expected they will be placed in commission for some time.

The new 250-ton furnace of the Lookout Iron Co., at Bat telle, Ala., was blown in Sept. 9.

W. J. Oliver has purchased the interests of Alex McMillan and Alex Scott, of the Scott-Oliver Mfg. Co., Knoxville, Tenn. The name of the concern will hereafter be the Oliver Mfg. Co. The new plant, which is the largest of the kind in the South, will be in full operation in a few days.

The Gartland Foundry Co., Terre Haute, Ind., will begin operations in a few days. The new plant starts out under most favorable conditions with a large number of orders on hand. The company expects to make a specialty of light gray castings for lawn mowers.

The Edwards Iron & Steel Co., Rochester, N. Y., recently incorporated with a capital of $250,000, will manufacture the Edwards mail catching and delivering devices, designed for use in the exchange of mail from swiftly moving trains. It will also manufacture mail devices used in and about the postal service, Edwards railway devices and equipment, hose nozzles and equipment, fire department equipment, switches, switch signs, signals, etc. The company proposes to build a plant as the business warrants, but has no definite building plans as yet. Among those interested in the company are: Joseph H. Beall, of New York; Charles T. Chapin, Thomas Shannon and H. W. Rippey, of Rochester, and John B. Abbott, of Geneseo, N. Y.

President Felton, of the Pennsylvania Steel Co., is thus quoted on the recent cuts made in the prices of steel products: "I do not see how the present situation can be improved by such action. On the other hand the natural result I think will be to further delay buying in those lines of products the prices of which have been cut. Had prices remained firm there would have been nothing to be gained by withholding orders provided business warranted putting them out. Now it seems quite probable that buyers will wait for a further cut."

The first shipment of steel rails made since the plant of the Lake Superior Corporation resumed operations was made Sept. 6, when 1,000 tons of rails for the Intercolonial railway were loaded on the steamer Neepawaha, to be landed at Montreal.

Among recent orders for railway equipment were the following: Chicago, Peoria & St. Louis, 400 coal cars from the Mt. Vernon Car Co.; Erie, 10 express cars from American Car & Foundry Co., which has also received miscellaneous orders for 20 cars. Northern Pacific has ordered 25 locomotives from the American Locomotive Co.

Nearly all the Corrigan stocked ore at Crystal Falls has been moved forward and shovels are busy taking off the rest. Tobin and Crystal Falls stocks are gone, Lamont and Great Western will be loaded in two weeks, and it is quite likely the mines may be unwatered and reopened soon.

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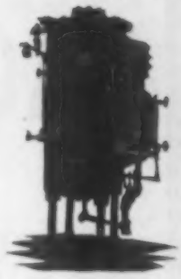

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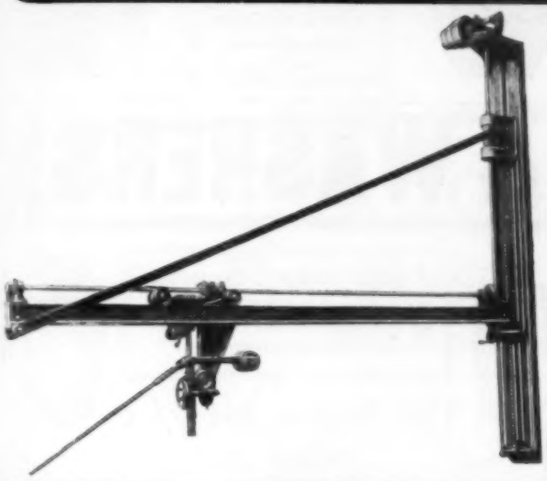

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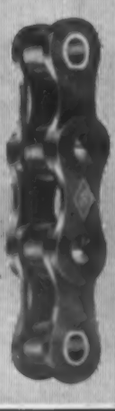

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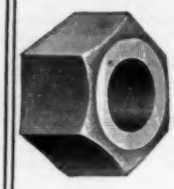

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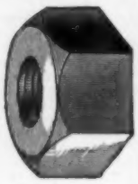
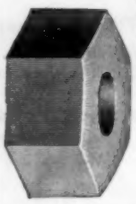


NUTS



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